President's Address,

DELIVERED AT THE

EIGHTIETH ANNUAL MEETING OF THE BRITISH MEDICAL ASSOCIATION,

BY

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"WHAT ARE WE? WHAT ARE WE DOING HERE? WHENCE DO WE COME AND WHITHER DO WE GO?"

MY LORD, LADIES AND GENTLEMEN,—My first and most pleasing duty is to extend on my own behalf, and on behalf of all the local members of our profession, a most cordial welcome to all the visitors to this great city. In our efforts to make this annual meeting of the British Medical Association a memorable and successful one we have been much aided by the Lord Mayor and the Corporation, by the Chancellor, Vice-Chancellor, Council and Staff of the Liverpool University, and by many of the citizens of Liverpool and the neighbouring boroughs. The hospitality which I hope you will all find dispensed on a liberal scale is not merely that of the medical profession, but of the citizens of Greater Liverpool and its environment. We are all delighted to see so many eminent medical men in our midst, especially when we know that they have not come to spy out the nakedness of the land. We hope that you will find this a pleasant place to visit, an eminent seat of education, culture, and refinement, and one of the largest seaports in the world where the people go down to the sea in ships. We are quite ready to place before you all the treasures of our storehouse for your admiration, but I am not at liberty to extend to any of you an invitation to take up your permanent residence here, as we are already well supplied, as you will no doubt soon discover, with eminent medical men who hold a pre-eminent position in their profession.

When I was considering what subject I should choose for my presidential address, I chanced to read the Huxley lecture on Life and Consciousness by Henri Bergson. He there asks the questions: "What are we? What are we doing here? Whence do we come and whither do we go?" Without following Bergson's philosophic disquisition as to how life and consciousness permeate matter and as to how they were started on their evolutional career by an original impetus, it occurred to me that these questions might be very appropriately asked of the medical profession. What are we? Can we show any sufficient *raison d'être* for our existence? Are we of sufficient value to individuals and to the State to justify our continued existence as a profession? Is the world any happier for our presence? Are we really an advantage to the higher evolution of the race? No doubt all these questions will be readily answered by ourselves in the affirmative, and, after all, we are, perhaps, in the best position to form a correct judgement on the subject. Moreover, the vast majority of the thinking public will acknowledge the utility of our existence in society as it is at present constituted, though there may be some difference of opinion as to our value. After all, our numbers are largely governed by the demand, and if the public did not require our services we would soon cease to exist. It has been said of us that we subsist on the misery of others, which no doubt is to a certain extent true, though we do not subsist by creating misery but by alleviating it. There is no other profession which has cut the ground so zealously and so successfully from under its own feet, and deprived its members of important sources of income. The practical abolition of typhus, typhoid fever, smallpox, and other infectious diseases has to a considerable extent lessened our revenue. We do not complain of such results, but, on the contrary, we rejoice with those who rejoice, and weep with those who weep. Our aim is not only the cure and alleviation of disease, but also its prevention and the preservation of health. We always give advice in the best interests of our patients—advice often fraught with our own personal disadvantage. On account of our disinterested advice we are trusted by the public; but, unfortunately, our noble self-sacrifice is often not adequately rewarded. The surgeons and specialists are the only members of our profession who have rightly insisted on their services being properly appreciated and adequately requited, and to their great credit I can testify that, in this city, at least, no greed of gain has ever tempted any of them from the path of rectitude.

During the last century or more we have been very busy trying to find out the causes of disease, the best methods of their elimination, and the proper treatment of our patients. We have to a large extent succeeded. A selective death-rate which was, and is, Nature's method of eliminating the unfit has been at least partially suspended by our efforts. Perhaps the majority of the medical profession—a profession still largely permeated by Lamarckian ideas—would readily accept the view of Bergson,[1] "That adaptation to environment is the necessary condition of evolution we do not question for a moment. It is quite evident that a species would disappear should it fail to bend to the conditions of existence which are imposed on it. But it is one thing to recognize that outer circumstances are forces evolution must reckon with, another to claim that they are the directing causes of evolution. This latter theory is that of mechanism. It excludes absolutely the hypothesis of an original impetus—I mean an internal push that has carried life, by more and more complex forms, to higher and higher destinies. Yet this impetus is evident, and a mere glance at fossil species shows us that life need not have evolved at all, or might have evolved only in very restricted limits, if it had chosen the alternative, much more convenient to itself, of becoming ankylosed in its primitive forms." Such ankylosis, Darwin would probably have said, would not only have stopped evolution but would have led to the extinction of the species. Bergson looks upon life as something apart from matter, something which permeates, modifies, and controls matter, and thus he views evolution from the side of life, whereas Darwin looked at evolution from the more materialistic aspect, the adaptation of the living structure and function to meet the requirements of the environment. While the views of Darwin have undergone and are undergoing considerable modifications as the result of the study of heredity which is being so well carried on in the present day, the brilliant scintillations of Bergson's intellect have not yet done more than captivate and stimulate the minds of thoughtful men. Many of us are quite willing, nay, anxious, to place life, consciousness, all the mental attributes, and that even less definable entity, the soul, on a much higher plane than that of the functions of the nervous system, but when the operations of the brain are annulled, as in profound anaesthesia, we are often forced to ask what becomes of these controlling agencies which permeate matter, and raise the intellectual man to his present sphere, so that in knowledge and wisdom he may be aptly described as made in the image of God. "Canst thou by searching find out God? Canst thou find out the Almighty unto perfection?" How far the human intellect, or, as Bergson would prefer, the human intuition, may yet succeed in unravelling many of the mysteries of life we cannot at present say, but I have no doubt that in the process of evolution the human intellect will be carried to a much higher plane than that to which it has at present attained, if, as Mr. Balfour has said, the forces of disintegration do not overcome those of civilization. It is, however, our duty as medical men and as citizens of a great Empire to move in the path of progress, and in every possible way to encourage the higher evolution of the race. Mental speculation is rife and is often ripe with great fruition, but when we come to deal with the stern realities of life we find it difficult or impossible even in our mental attitude to separate life from matter. Huxley said life as we know it is inseparably connected with protoplasm—without protoplasm there can be no life. It is, therefore, important that we should see that the highest form of protoplasm, that capable of starting the individual life and giving rise to the greatest amount of differentiation of structure with the accompanying functions, the germplasm, should be of the highest order. An impure germplasm cannot tend to the higher evolution of the race no matter under what environment it is developed.

Natural evolution, and the evolution of the art and science of medicine, run on different lines; they are often

mutually opposed except when Nature gets the upper hand, and medical men are blindly following their ideas of natural laws. Nature is lavish in the production of life and prodigal in its destruction; her efforts are directed to the improvement and perfection of the species, she cares nothing for the individuals except to adapt them to the environment. This process of adaptation spells elimination for the unfit, and thus we get the survival of those best suited for their surroundings, and these in their turn produce a vigorous, intellectual, and self-reliant race. Medicine, on the other hand, has been evolved for the benefit of individuals. It does not deal with the unborn, but merely devotes attention to the living. Medical men exist for the benefit of the public, not the public for the advantage of our profession. The interests of the public and of the medical profession run on parallel lines, hence both are apt to take a narrow and very selfish view of man's position in Nature. Each is ever ready to consider what will contribute most to its own immediate advantage without any special regard to futurity. Hence we not infrequently hear such exclamations as "What has posterity done for us? Why should we consider the future of the race? It is sufficient for us to look after our own progeny who have already arrived in this world." It seems sufficient for a good many people to know that they have descended from William the Conqueror, or from some of his mighty men of valour whose virile power they have not yet quite succeeded in dissipating. They are not very particular as to the purity of the germ-plasm which they are handing on to succeeding generations. Medical men are ever more or less successfully adapting the environment to the individual, and giving the weakling an equal chance of survival with the strong; in fact, often a much better chance not only of surviving but of multiplying, because the strong and virile have to take all the risks, not only in supporting themselves but also in maintaining the decadent. We have successfully interfered with the selective death-rate which Nature employed in eliminating the unfit, but, on the other hand, we have made no serious attempt to establish a selective birth-rate so as to prevent the race being carried on by the least worthy citizens. The same maudlin sentimentality which often pervades the public not infrequently affects the medical profession. We have often joined forces with self-constituted moralists in denouncing the falling birth-rate, and have called out for quantity regardless of quality. We readily forget that utility, as long ago pointed out by John Stuart Mill, lies at the basis of all morality. We are also apt to forget that a high birth-rate is practically always associated with a high death-rate, and a low birth-rate with a low death-rate; the former is Nature's method, a method which has always produced a fine race, though very slow in doing so, but with the advance of civilization Nature's method is too crude and barbarous, and, as man rises superior to Nature and obtains more and more control over her laws, such barbarities are replaced by more humane methods.

The spirit of altruism reigns supreme, the highest product of human evolution is shown by sympathy with our fellow-beings in their suffering. We feel compelled by the dictates of conscience to preserve, as far as possible, every human being, no matter how imperfect his intellectual and physical development. Sickness and distress make all flesh akin, but our object should be to prevent such maladies rather than to imagine that they have been sent by Providence. The practitioner of medicine can frequently point out individuals who have been rescued from the grave and restored to health. The duration of life depends not only on the constitution of the individual, but on the care which he has received. In dealing with any particular life, the doctrine of predestination—so far as the human intellect can fathom—must fall to the ground.

The object of our professional existence, so far as the public are concerned, has hitherto been the prevention and cure of disease, the alleviation of human suffering and the prolongation of life. Our medical officers of health have devoted much attention to sanitation, looked after the quality of the food and drink, the air we breathe, and the water we drink—in short, our whole environment. The incidence of infectious diseases has been lessened, and their treatment rendered more effective both for the individual and the community. Practitioners and physicians have employed their energies in the study of diseases in general, their treatment, and, to a certain extent, their prevention. Their failures have not infrequently afforded the surgeons a rich harvest—a harvest which is not likely to be all gathered for a long time yet. The marvellous vitality and wonderfully adaptive powers of the human body enable it to survive innumerable mutilations. The surgeons hold, and rightly hold, that prevention does not come within their sphere, as the inception of disease rarely comes within their purview, but very many surgeons, guided by altruistic feelings of a high order, do look back and consider how such mischief might yet be obviated in the future. They are not content to remove a stone from the bladder or kidney, but do honestly consider, so far as their physiological knowledge carries them, how a recurrence can be prevented.

What are we? What are we doing here? We have often assumed the position of guides, philosophers and friends, but in the main we are individuals who deal with the prevention and treatment of disease, and, to some extent, with the maintenance of health. That is what we are doing, and what we shall continue to do for time immemorial if some of our ignorant legislators, who know nothing and care less about physiological laws, have their way. There are a great many people who think that they can have sixpennyworth of health by the purchase of a bottle of physic. Even the British Government Health Restorer is at a serious discount, as we are led to believe that ninepennyworth of that refreshing fruit can be had for fourpence. Those who put such a low estimate on the position of the medical profession are very apt to grumble when they discover that the health which they have ruthlessly dissipated often cannot be recovered for money. Many of the higher and more intellectual minds in the medical profession have ever refused to be bound within such narrow confines. They have studied humanity, and considered how best to raise it to a higher plane, and how to improve the ancestral patchwork, which in many families shows some scars. Notwithstanding the gross ignorance which is rampant in our Legislature, and the failure of many to perceive the future from the past, there is yet a growing consciousness among the more intellectual members of the community that the present state of matters must not be allowed to continue. We must raise up a vigorous, intelligent, enterprising, self-reliant and healthy race. It is becoming more generally recognized that even that highly differentiated mass of protoplasm, the nervous system, through which the mind operates, is in most perfect working order when a part of a sound body. We come with the tradition of healers both of mind and body, but there must be no hesitation as to whither we go. We must not rest content with the mere treatment of disease, we must instil into the public mind intellectual and physical health. We must continue to deal with the prevention and treatment of disease, but we must also ascend to a higher platform and raise the banner of health with all the fervour of a new religion. The dread of hell-fire which was formerly an even more effective force than the hope of heaven in keeping men in the straight path of moral rectitude, has now almost ceased to be an operating force on human intelligence. Virtue must be followed for its own sake; the idea of the greatest happiness which, according to John Stuart Mill, is the fundamental basis of morality, must be cultivated. We must point out the path along which the moral, intellectual, and physical health of the nation is to be evolved.

If this achievement is to be accomplished we must begin with the unborn. The race must be renewed from the mentally and physically fit, the moral and physical degenerates should not be allowed to take any part in adding to the race. Above all, we must breed for intelligence. The laws of heredity should be widely taught, so that those with hereditary blemishes may consider their moral responsibility in bringing children into the world. It is a question of quality rather than quantity. If every one would consider his moral responsibility to the race rather than his own selfish gratification, in a very few generations we might produce a pure, moral, highly intellectual, and healthy race. Of course, we could not make all equal—there is no such thing in Nature, and never can and never will be, and it is not desirable that such should be—but we could raise the average plane and get rid of the present

decadence. I know that in the expression of these views I am coming into direct conflict with at least some of the churches, of which there are almost as many varieties as there are of human beings. The majority preach in favour of quantity rather than quality; they advocate a high birth-rate regardless of the consequences, and boldly tell you that it is better to be born an imbecile than not to be born at all. They forget the saying of Jesus of Nazareth that it would have been well for this man if he had never been born. With the man-made morality of the Church I can have neither art nor part. There must be a high racial morality based on utility and the greatest happiness, not merely of the individual, but of the race. Medical men, when they are consulted, as they often are, on questions of matrimony and reproduction, incur a very serious responsibility when they encourage the mating of mental and physical weaklings. It is their duty not to pander to the selfish gratification of the individual, but to point out to every one his positive and negative duties to the race. It is generally held nowadays that intelligence, physique, and health are innate and heritable qualities, but morality is largely, if not entirely, an acquired and traditional characteristic. If this be so there will continue to be plenty of work for the clergy for generations yet unborn. The future of the medical craft would seem to be in greater danger than that of the clergy or even of the lawyer, but medicine must be evolved more and more with the demands of the times. The time is now ripe for dealing with mental weaklings, and they will be effectually dealt with in all progressive nations. The conscience of the intellectual in all grades of society is being awakened to the responsibility of individuals to their offspring, and the advanced thought of the intelligent portion of the community will demand something more than treatment from the medical profession. This will place physiology on a higher plane than pathology, and will require an even more advanced study of the laws of health than of the tendencies to degradation and disease. There are none of our medical schools yet efficiently equipped for this teaching, either with teachers or material, but the post-graduate work at the Liverpool University will bear favourable comparison with that of any other school in the kingdom. Such teaching is bound to come, and advanced physiology and biology must lead the way.

In the not far distant future an intelligent public will not rest satisfied with such a state of matters as revealed in the statement in the loyal address of the Royal Society of Medicine to Their Most Excellent Majesties on the occasion of the opening of the Society's new buildings, that,[2] "the vocation of the medical profession is not only to preserve the individual by curing disease, but to improve the health of the nation by promoting hygiene and preventing illness." The reasonable inference from this somewhat belated statement is that health, though not a negligible quantity, is looked upon as chiefly a negative quality obtained by the cure and prevention of disease with a little hygiene thrown in. This conveys no higher ideal than the prayer of a clergyman to be saved from eternal damnation rather than an appeal for the joys of heaven. If the functions of the medical profession, as portrayed in His Majesty's most gracious reply, though much more expansive than those already quoted, be all which are required of his medical advisers, then every dutiful and loyal subject should constantly and fervently pray "God save the King."

The work of Lord Lister, who was a great physiologist, emancipated surgery from the thraldom of tradition, and the great advances which have consequently taken place in that branch of our profession have been the marvel of the age. The progress of medicine during the same period, though noteworthy, has not been so startling. Unfortunately the progress of medicine has been stifled by tradition and by a succession of more or less reputable old gentlemen who, having attained to place and power by accidental circumstances rather than merit, have not seen the necessity for change. There have been, however, many insurgents who have disregarded the trammels of tradition and led the van of progress. The brilliant advances of surgery were rendered possible by the exclusion of pathogenic organisms, by an improvement in the environment; but such methods are not always possible in internal medicine. We must not only pay attention to the environment, but we must raise the defensive forces of the individual, increase his inherent powers of resistance, and, as far as possible, render him immune to disease. We can point to the remarkable work of Edward Jenner in protecting the individual against small-pox, the work of Pasteur on hydrophobia, of Koch on tuberculosis, and more recently the epoch-making work of a Liverpool man, Sir Almroth Wright, on the prevention and treatment of many infectious diseases.

Some of the greatest advances in modern times have been with regard to the prevention and treatment of infectious diseases, and as prevention is generally looked upon as more important than cure the part played by medical officers of health must become more prominent. The improvements which they have effected in sanitation and in the segregation of disease have been of great advantage to individuals, but it is very doubtful whether their efforts have been equally beneficial to the race. We are kept constantly informed of the number of lives which they have saved, or, perhaps, to put it more accurately, of the number of deaths which they have prevented, but they wisely never attempt to trot out the individuals whose lives they are supposed to have saved. Their work is purely environmental, and the only lives which they save are those of susceptible individuals whose resisting power is low and who have not been infected. Once a person has been infected his recovery depends on his own innate powers and on medical treatment. They have largely succeeded in abolishing cholera, typhus, and typhoid fever by getting rid of the sources of infection and thus limiting the incidence of those diseases; but they have in no way added to the immunity of the race or lessened the susceptibility of the individual. With measles, scarlet fever, and whooping-cough and influenza there has been less success, but from the general experience of those diseases by our race, it seems that Nature has gradually established a use-acquirement, and consequently the virulence and fatality of these diseases is becoming much less. Notwithstanding all sanitary improvements, the incidence of diphtheria has actually increased, but by antitoxic treatment the fatality has been greatly lessened. If we could only abolish the tubercle bacillus in these islands we would get rid of tuberculous disease, but we should at the same time raise up a race peculiarly susceptible to this infection—a race of hothouse plants which would not flourish in any other environment. We would thus increase at an even greater rate than we are doing at present, nervous instability, the numbers of insane and feeble-minded. Nature, on the other hand, weeds out those who have not got the innate power of recovery from disease, and by means of the tubercle bacillus and other pathogenic organisms she frequently does this before the reproductive age, so that a check is put on the multiplication of idiots and the feeble-minded. Nature's methods are thus of advantage to the race rather than to the individual.

Regarding venereal disease, Nature has been trying to work out the salvation of the race during the last 500 years by rendering individuals less susceptible to these diseases, but she has not yet succeeded in establishing anything like general immunity. The virulence of these diseases has, no doubt, considerably abated, but their dire effects are still too manifest, and, as Nature's methods are too slow, a determined effort should be made to stamp them out, regardless of the pharisaical hypocrisy of some moralists. The suffering caused to innocent wives and children by these diseases calls aloud for their elimination. Vastly improved methods of treatment are not enough, and a combined international effort should be made to stamp them out. Mr. C. J. Bond says:[3]

> Innate capacity of recovery or resistance to disease on the part of the body cells becomes innate capacity to vary intracellularly when exposed to new conditions introduced by disease organisms. And this capacity to vary, although possessed in different degree by all the individuals of a race that has had sufficient experience of the disease in question, remains latent in such individuals until roused to exercise by exposure to disease. Thus by the exercise of this capacity for intracellular variation on the part of the cell and by the selection of the most appropriate kind of molecular response a new character arises in the cell, that of a capacity to resist reinfection, representing from the point of view of the individual organism a "use-acquirement."
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> Moreover, by so regarding individual reaction to disease, we are bringing the use-acquirement of the immunity reaction into some sort of relationship with the use-acquirement of neural response which we have already seen reason to think is also the

outcome of a process of variation and selection among the intracellular elements in nerve cells.

Just as the latitude of the neural response is determined by the hereditary limits of innate neural capacity, so the latitude of the individual immunity reaction is determined by the extent of the hereditary capacity of recovery or resistance to the disease.

The crude but effective methods of Nature in raising an immune and virile race are being gradually superseded by improvements in the environment, and by the abolition of the pathogenic organisms, so it becomes more and more the duty of the medical profession, while employing every means in its power to preserve the life and health of the individual, to point out to the community its obligations to the future of the race. As Mr. C. J. Bond again says: "The necessity for being immune by nature becomes less as the possibilities of becoming immune by art become greater."

The work of Almroth Wright has been chiefly with pyogenic organisms, typhoid fever, influenza, pneumonia, and tuberculous disease. In the treatment of that extremely fatal disease—pneumonia—vaccine therapy, when properly adjusted, has proved highly efficacious; but there are still some who wait until all other methods have failed before attempting to produce an artificial immunity. I think in the near future the public will become more enlightened in the methods of preventing this dire disease. In dealing with the pneumococcus and other septic organisms in the mouth, surgeons often fail. In my opinion no serious operation should be undertaken in the mouth until the individual be rendered more or less immune to the pathogenic organisms which frequently flourish in the oral cavity. In cases of pyorrhoea alveolaris excellent effects have been achieved with Almroth Wright's parodontal streptococcus vaccine. Septic infection by the mouth and intestinal tract is the forerunner of pernicious anaemia, as long ago pointed out by William Hunter, and when the public become more alive to the dangers of oral sepsis we will see less of this intractable disease.

It will be very difficult to prevent the spread of infectious diseases among children so long as we have overcrowding, defective ventilation, dirt and want of cleanliness in the homes, schools, and public conveyances. However, a great deal can be done, and is being done, for local conditions by looking after the children's teeth, by seeing that their teeth and jaws get plenty of exercise in chewing food, by keeping their mouths and nasal passages as aseptic as possible, and by removing any obstructions, such as adenoids and large tonsils. Every affection of the nose and throat, and, in fact, of the whole digestive tract, should receive immediate medical attention, as it is through these pathways that the rheumatic poison or organism is introduced, also those which produce infantile paralysis and cerebro-spinal fever. By means of school inspection and school clinics the children of all classes of the community will receive at least precautionary treatment.

The infectious diseases to which I have referred merely touch the fringe of preventive medicine, and have comparatively little to do with the health of the community.

I now wish briefly to sketch some of the lines along which progress must proceed, and in doing so I shall deal with some of the functions of the human body, beginning with those of the nervous system. The lower we descend in the animal scale the more simple does the nervous system become, until finally it disappears as a structure though some of its functions remain. In the evolution of the human body the various structures and functions have attained their highest differentiation and most perfect adaptation for the division of labour.

The wonderful complexity of the nervous mechanism as the organ of the mind excites our wonder and admiration, but however far our intelligence enables us to analyse and measure the operations of the mind, it does not carry us very far as to its nature. We may try to find out the nature of life and vital force, and imagine that such is merely the function of protoplasm, but we have not yet succeeded by any synthetic process in the formation of any organic compound, except such as are the degradation products of vital metabolism. We have not succeeded in producing any organized living structure, and are not likely to do so.

In speculations as to the nature of consciousness and of the mind we must often and largely be guided by intuition, because such speculations are incapable of measurement or of any scientific definition, but even the intuition of Bergson does not carry us very far along the path of knowledge when he says:[4] "Instinct is sympathy. If this sympathy could extend its object and also reflect upon itself, it would give us the key to vital operations—just as intelligence, developed and disciplined, guides us into matter. For—we cannot too often repeat it—intelligence and instinct are turned in opposite directions—the former towards inert matter, the latter towards life. Intelligence, by means of science, which is its work, will deliver up to us more and more completely the secret of physical operations; of life it brings us, and, moreover, only claims to bring us, a translation in terms of inertia. It goes all round life, taking from outside the greatest possible number of views of it, drawing it into itself instead of entering into it. But it is to the very inwardness of life that *intuition* leads us. By intuition I mean instinct that has become disinterested, self-conscious, capable of reflecting upon its object and of enlarging it indefinitely."

While ready to agree with Bergson that intellect and intuition run in opposite directions and are often developed at the mutual expense of one another, the scintillations of this genius are more apt to appeal to the metaphysician than to the physician, as the latter has generally to deal with hard facts already made for him. The intellectual scientific man is apt to hold that all phenomena will ultimately be explained in scientific terms, and that even mind and consciousness may be shown to be the highly evolved functions of a highly differentiated nervous protoplasm. On the other hand, intuition leads us to a higher conception of life and consciousness as something more than mere functions of organized material, something apart from matter, but which our intellectual conceptions cannot conceive except in association with matter. Our intuition leads us to look upon mind as a guiding principle which can enter and control matter, a something which can rise to higher spheres, whereas the organized material which it directs and controls returns to inert or degraded matter when the control ceases. Bergson forcibly puts the position for natural instinct as follows:[5]

"When a strong instinct assures the probability of personal survival, they are right not to close their ears to its voice; but if there exist 'souls' capable of an independent life, whence do they come? When, how, and why do they enter this body which we see arise, quite naturally, from a mixed cell derived from the bodies of its two parents? All these questions will remain unanswered, a philosophy of intuition will be a negation of science, will be sooner or later swept away by science, if it does not resolve to see the life of the body just where it really is, on the road that leads to the life of the spirit. But it will then no longer have to do with definite living beings. Life as a whole, from the initial impulsion that thrust it into the world will appear as a wave which rises, and which is opposed by the descending movement of matter."

It is the higher evolution of the intellectual grades of society that we require in the present day. If the moral, intellectual, and physically well-developed members of the community are to have a fair chance of development, their energies must not be entirely dissipated in providing for the progeny of wastrels. Reproduction must proceed from the most worthy. We want quality rather than quantity, but when the quality is good you cannot have too much of a good thing. Dr. Inge, the Dean of St. Paul's, recently said "that the great menace to our civilization was not so much the stationary birth-rate of the upper classes as the great increase among the poor and ill-fed population of our great towns."

Our progress may depend, as Mr. Balfour has said, on the forces of civilization being able to overcome those of disintegration. We have had during the past year many examples of the disruptive forces of society which are not tending to efficiency and to a higher level of civilization, but to a lower average level of intelligence and of general happiness.

During the last half-century there has not only been an absolute but also a relative increase in insanity, and this increase is becoming more and more noticeable among decadent stocks. This of course tends to elimination, and so tends to retain the average level of the population, but much mischief is wrought before this elimination takes

place. The increase of the feeble-minded has recently been so apparent, notwithstanding our defective statistics on this subject, that there is now a loud cry for legislative interference. This class, although their average longevity is not great, are very prolific, and are not guided by any economic considerations; they simply gratify their natural passions without any regard for the consequences, and so start reproduction at an early age. The same proclivity is noticeable among the wastrels, the unemployables, the paupers, and the ne'er-do-wells.

The hard-worked wage earner has no fair chance, as he has not only to support his own progeny, but is taxed almost out of existence to maintain the extravagance of wasteful Governments, and of a sympathetic irrational public. "The right to live" is not a doctrine held by any political economist, but is a doctrine which has been forced upon us by the evolution of sympathy. However, we should not allow our indulgence to degenerate into licence, and while we look after the wastrels of the present generation, and thus gratify our sympathies to our heart's content, we have no moral right to leave a legacy of mental obliquity and of physical decadence to weigh upon the next generation.

The idea that insanity and genius are closely allied has still so strong a hold on the public mind that many would not interfere with the insane in hope that some day they may breed a genius. Those who adhere to this ancient and, in the main, ill-founded belief do not know what constitutes a genius, they ignorantly mistake eccentricity, or uncontrolled and ill-regulated mental activities, for genius. There is not much danger of intellectual visionaries being disturbed in the present day, there are many of them at large, and more knaves than fools among those who batten on an ignorant and trusting public. The higher the intellectual evolution the greater the number of geniuses that are likely to be produced. There must be inherited, innate qualities capable of development; a favourable environment will contribute to such development, but it can never create a genius. You cannot gather grapes from thorns, nor figs from thistles. Dr. Mott says,[6] "No two brains are alike, any more than two faces, but there is a close family resemblance."

There is a tendency in the present day to devote more attention to the morbid manifestations of the brain, to its degenerative changes and the fall from its high estate, than to the consideration of its evolution and development. The neuroses are studied more for their creation than for their elimination. Weird methods of study are encouraged, sensational and erotic tendencies are looked upon as natural rather than as, what they really are, degradation processes. With the elimination of tuberculosis a larger number of unstable nervous individuals reach the reproductive age and hence a number of individuals are produced who early qualify for asylums. It is not any particular form of insanity which is inherited, but a neuropathic tendency which may eventuate in many forms of disease, and this disturbance is often associated with disorders of the intellect. A defective nervous system is often at the basis of imperfect metabolism, with the formation of autogenous poisons, which affect the nerve centres. In this way such diseases as epilepsy and hysteria are transmitted from one generation to another.

Though you may believe that the evolution of the nervous system has been brought about from a primordial cell, there can be no doubt that in this mass of protoplasm both structure and function have reached their highest differentiation. The brain and its nervous connexions are not only the organ of the mind—the organ through which our perceptions, conceptions, free will, and reasoning powers are executed—but this nervous mass has also a controlling and governing influence over all the movements and functions of the body as a whole. It is not alone the defects, but also the stability and higher innate qualities of the brain which are inherited, and these higher qualities are capable of enormous development. Some of our educational authorities act as if they believed the brain to be like a piece of elastic which could be stretched out at the will of the educator, and that all individuals with equal opportunities should develop alike. They are not aware that, although the brains are composed of the same ultimate elements, the quality is variable, and some brains are not even educable. The ductility is different, and where there is no cohesion there can be no ductility. This ignorant plan of affording equal opportunities to all, opportunities of which the vast majority cannot make use, has cost the country an enormous amount of money, money wasted, which for all the good it has done, or ever can do, might as well have been dropped to the bottom of the ocean. What is the use of trying to draw out intelligence where there is none? If you wish to stretch a piece of wire you must first get the wire, and then the ductility will depend on the material; if it be composed of platinum or fine gold the ductility is extremely great, but where there is no tenacity there can be no ductility. The feeble-minded individuals are a growing incubus on the nation, and should be dealt with in the most humane manner by their sterilization or segregation. It is for the nation to decide which method shall be adopted, but the latter will comport best with the general feeling of the community. Dr. Mott again says:[6] "The profound psychical influence of the sexual glands, by reason of their internal secretions during the period of ripening of the germ cells, is beyond all dispute, and the repression of the instinct of propagation, attendant mental dejection, or excitation, is a powerfu exciting cause of mental or nervous disorders." However, no surgical procedure has been proposed which would interfere with those internal secretions. There are some who contend that an increase of the celibate population would be a menace to society, but a society which could not cope with such a feeble menace would scarcely be worthy of existence. Moreover, what about the enormous numbers of women, and of men to a less extent, who are forced to live lives of celibacy by the present artificial state of society?

Most of the hereditary nervous diseases could be eliminated and the numerous neuroses could be checked by removing many of the causes that favour their development, and by encouraging the reproduction of the race by individuals with stable nervous systems. For the normal activities of the mental attributes you must undoubtedly have a healthy and properly nourished nervous system. It not infrequently happens that men with brilliant intellects may also have inherited or acquired physical defects, and their will power may be able to control and direct the operations of the mind, but it is within the experience of most intelligent individuals that the best mental work is accomplished when in sound health. An author is not always happy in the expression of his thoughts, and his phrases do not always flow freely, even from a facile pen, when he is not in bodily health. To maintain the brain in healthy working order there must be a free supply of pure, well-oxygenated blood. The brain no doubt retains its activities under less favourable conditions longer than the other organs of the body. The interrelations between the nervous system and the other organs are to the mutual advantage of all. In the differentiation of function the brain, as the most highly evolved part of the body, is the controlling agent over all the other functions. The circulation, the respiration, the digestion, locomotor and reproductive functions are all controlled or regulated by the nervous system. The higher functions of the brain may be active or impaired when the lower ganglia are healthy, hence the imbecile or feeble-minded may have all his animal functions highly developed. But when you have an unstable nervous system the lower functions are generally disturbed, the resisting powers of the individual to disease may be at a low ebb, hence an aberrant intellect is not infrequently associated with tuberculosis. With a healthy brain and body the individual is less prone to succumb to many maladies. For the healthy action of the brain nothing contributes more than the motor activities of the body as well as the active functions of the bodily organs. Life implies change, and in order to maintain a healthy, vigorous mind and body we must not rust out. The functions of the body, like the elasticity of a piece of rubber, become impaired from want of use; the innate qualities of the brain must be developed if it is to exercise the intelligent functions of the mind. Outdoor exercise is most essential in the treatment of the insane, and healthy exercise both of the body and mind must largely contribute to the maintenance of the functions of both. The brain, when subjected to the influence of very high temperature, and to many poisons, cannot properly perform the functions of the mind. The presence of many inorganic salts is just as essential for the discharge of the function of the

brain as for the maintenance of the action of the heart. When we find that various inorganic ions and difference in electrical potential are necessary to the life of the cell, we cannot feel surprised that some think that it will be discovered eventually that life itself is a modification of electrical energy. We are a long way off solving the riddle of life, let alone that of mind. We can analyse and measure many of the attributes of the mind and the functions of the body, but as to where life and soul spring from and whither they go we are still as far as ever from the solution of such problems.

The march of medical science teaches us that not only are infectious diseases and evil hereditary tendencies preventable, but nearly all the ills to which flesh is heir can be more or less obviated while maintaining a high standard of physical health, and the body only subjected to the ordinary processes of wear and tear which are the necessary accompaniments of healthy existence. There is no scope for eternal life in this sphere.

Diseases of the heart are, perhaps, more easily prevented than those of any other organ, but in these days prevention is rarely attempted. Those who are fond of posing as authorities in such matters prefer waiting for the development of the disease, and are then quite prepared to give a learned disquisition on the various arrhythmias. When they have made a graphic illustration of the sequence of events, they vainly imagine that the problem is solved. An observation of a sequence is no evidence of the cause of that sequence. A clear comprehension of the physiology of the heart is of much more importance for a right understanding of the working of that organ in health and disease than any amount of pathology. When it is more generally recognized that free calcium ions are essential for the continued contraction of the cardiac muscle, and that it is necessary to maintain a difference in electrical potential between the salts in the cell and those in which the muscle cell is bathed, then the methods of maintaining the healthy functions of the heart will be better understood. When it is more generally recognized—what I long ago pointed out—that chronic degenerative lesions of the heart and arteries usually arise from causes acting on the periphery we will be better prepared to deal with such lesions when they occur, and, what is of much more importance, prevent their occurrence. What is the good of measuring arterial blood pressure if you be not alive to its importance, and are not prepared to analyse its significance and regulate its effects? Methods of precision are essential in all scientific research, but in the interpretation of the results it is not the instrument, but the man behind the instrument, who makes or mars the observation. Pseudo-scientists are prone to think that when research becomes practical it ceases to be scientific, and while holding such views their work is not readily exposed to criticism, as they rarely enter into the domain of practical experience. Such work may carry a man into the highest scientific societies and enable him to pose as a man of more than ordinary intelligence. No doubt knowledge should be acquired for knowledge's sake, virtue is its own reward, but the man who glories in his knowledge because it can be of no use to any human being is not truly scientific, unless indeed he be a "pure" mathematician, which is next door to a metaphysician. The greatest minds that have ever adorned this sphere have never scorned utility. Newton, Young, Lister, and Kelvin were always pleased when their deductions had a practical outcome, when their science came down to the bedrock of common experience and became part of common knowledge. We should encourage the highest developments of the best minds and let every one follow his own bent, in the hope that the collective wisdom or conglomeration of ascertained facts may eventually be pieced together for the common good.

The maintenance of an efficient circulation is necessary for the well-being of the whole body, and we must be careful that efficiency is attained at the least possible cost of energy, and that the heart is not required to maintain an efficient circulation at the expense of its early dissolution. The innate power of adaptation on the part of the heart to meet any demand for extra work should be used for the benefit of the individual, and not wasted in overcoming unnecessary resistance. The heart is often plied with digitalis, like the back of a horse with a whip, when the proper method would be lighten the load. The high arterial blood pressure engendered by peripheral resistance leads to impairment of the elasticity and nutrition of the vessels. These damaged vessels become the site of calcareous deposits, which still further impair their elasticity. Free calcium ions are absolutely essential for the maintenance of cardiac contraction, but any excess of fixed lime in the circulation increases the viscosity of the blood and thus adds to the work of the heart. A nice adjustment of the electrolytes in the circulation is essential for the efficient working of all the functions of the body.

The advances in chemical biology have been great in recent years, and in this advanced work Liverpool has taken a prominent part, but still further study is requisite. Witness the marvellous effects which the secretions of the ductless glands have on the mental and physical attributes of the human body. In myxoedema the individual is slow in thought and speech, all his mental faculties are at a low ebb, he is neither alert in body or mind, his movements are executed in a slovenly manner, he appears more fitted for a condition of hibernation than for the normal activities of life. On the other hand, in cases of exophthalmic goitre there is a state of unstable equilibrium; the individual is sharp, alert, even vivacious, but easily exhausted both mentally and physically, and is incapable of sustained effort.

In diseases of the pituitary and suprarenal glands there is a great fall in the blood pressure, often so great that the circulation cannot be maintained in the erect posture; while on the other hand excessive activity of these glands may, and no doubt often does, lead to general arteriosclerosis. The important parts played by the red bone marrow, the lymphoid tissue, and the spleen in blood renovation are well known. The simple and malignant diseases of the mammary glands in the female, and the prostate in the male, are largely associated with irritation in their ducts and defective functional activity; the methods of preventing such occurrences will, I am convinced, soon be solved.

In skin diseases the old ideas that irritation may arise from within as well as from without, that a morbid condition of the blood is responsible for many outward manifestations of disease, are often likely to lead to more successful methods of treatment than the present habit of ascribing everything to one or other microbe. It seems to me that both ideas are correct within certain limitations, and one should not be studied to the exclusion of the other.

At this meeting you will hear much, I have no doubt, about the causation of gastric and duodenal ulcers, and a more clear concepton of their causes will, I hope, eventually lead to their prevention. The stomach is a long-suffering organ, and it is very fortunate that its varied experience has enabled it to adapt itself to very varied conditions. On previous occasions I have pointed out the parts played by anaemia and deficiency of lime salts, while on the other hand, when calcium is in too great abundance it is apt to induce thickening of the pylorus with consequent obstruction. The insoluble lime soaps are frequent sources of irritation in the intestinal tract. Many affections of the digestive tract are largely questions of dietetics which should receive more attention than they have in the past. Even the surgeons are beginning to recognize that appendicitis is largely a preventable disease, though they cannot be held responsible for the fact that it is often not prevented. Vaccine therapy in many such cases is of great value. Mucous colitis, dysentery, and infantile diarrhoea are more easily prevented than cured, but on these points the public have not yet become sufficiently alive to their own interests. Our medical officer of health in this city has done invaluable work in the supply of pure milk, and in getting rid of that domestic pest, the household fly. The increased prevalence of malignant disease of the alimentary tract is due, as was pointed out by Metchnikoff, to stagnation—a warning which everyone should take to heart.

The commonest cause of gastric catarrh and of cirrhosis of the liver is alcohol, and its control rests with the public rather than with the medical profession. The brunt of the evil effects of alcohol falls primarily on the stomach, liver, lungs, and nervous system; while the teetotaler, in my experience, from eating too much, and from the immoderate consumption of lime salts, more frequently

suffers from arterio-sclerotic changes and chronic diseases of the kidneys. In the causation of diseases of the circulatory system alcohol does not play the prominent part with which it is usually credited, but syphilis is a very potent factor.

The versatile genius of Albert Abrams, who has come all the way from San Francisco to do honour to this meeting of the British Medical Association, has taught us how best to cure intrathoracic aneurysm, and he has shed light on the nature of the cardiac and respiratory reflexes. In the treatment of diseases of the heart and lungs his work does great credit to the New Continent, and he has also given us further insight into methods of prevention. It is usually much better to improve the peripheral circulation and lessen the resistance than to make free use of cardiac tonics. It is much better to prevent heart-block, cardiac arrhythmias, and angina pectoris than to treat them. The classic work of Sydney Ringer, and allied work which is now being carried on at Cambridge by Ralph Mines, have thrown a flood of light on the physiology of the heart, of which practical physicians should not be slow to make use.

We have come from Hippocrates onwards with a long tradition of healing, much of which the public has taken in good faith and usually in blessed ignorance, but whither do we go? My friend Professor Benjamin Moore would say the Dawn of the Health Age is upon us, but I trust the dawn and the noon-day of the future will be much brighter than any picture which he has portrayed. We do not want a race of gently reared, hot-house plants, which his system would imply. We want a race of men. We want to uphold the saying of Disraeli, that "Man is not the creature of circumstances; circumstances are the creatures of man. We are free agents, and man is more powerful than matter." We wish to say with Emerson, "Life must be lived on a higher plane—we must go up to a higher platform, to which we are always invited to ascend; there the whole aspect of things changes."

The profession that has made the greatest strides during the past half-century has been engineering with its allied sciences of physics and mathematics, yet the medical profession has to deal with a much finer piece of mechanism than anything which has ever been constructed by the hands of man. Moreover, we have got the advantage over the engineer in that our machine is a very durable, self-regulating and self-repairing automaton—a machine in the construction of which, fortunately, we have had no say. All we have got to do is to study its mechanism and its functions, to regulate the works, preserve their autonomy and prevent their destruction. On the other hand, a learned member of our profession has recently extolled our labours, and pointed out our difficulties by showing that the works of the human body are covered up, the hatchways battened down, and yet we are expected to find out and set right any defect in the internal machinery. This form of argument would be apropos if our eyesight was the only sense which we possessed, but the physiology of the body is fairly well understood, and methods of arriving at a correct solution of most problems are at hand; the difficulties are in the application of the knowledge which we possess. We cannot too strongly insist on the higher teaching of physiology, but this necessity is not yet generally recognized even by the General Medical Council. In support of the contention that such teaching might not be practical, some readily point to the small modicum of physiological knowledge which some leaders in the medical profession find sufficient for their daily work. To such we can say that the public will not be so ignorant in the future as they have been in the past, and such leaders will soon be covered up as well as their mistakes.

The path of progress which I have tried to point out will in the future devolve on such great associations as the British Medical—associations which have got no selfish interests to serve, but which have only the honour and dignity of the medical profession and the welfare of the public at heart. We often hear such bold statements as that the general medical practitioner is doomed, his occupation has gone, and his livelihood has vanished. Those who thus talk have their heaven *in statu quo*—they think there is no blessedness beyond the maintenance of their own ignorance. In my opinion the future of medicine will rest with enlightened and highly educated general practitioners—men who will look after the health of the community, who will see that mechanism of a high order is produced, and who will see that the machinery of the individual is properly lubricated and not subjected to any unnecessary friction or strain. The enlightened public will look to their medical attendants as guides, philosophers, and friends, both in health and disease.

As has been long advocated by the British Medical Association, we must have a properly regulated State examination, and the vested interests of corporations must not be allowed to prevail against the public weal. Mere examining corporations which have done practically nothing for medical education, and are chiefly engaged in extracting fees from students, should be allowed to retire into obscurity. There is here plenty of good work for an able statesman—a man determined to lead and to prevent the present policy of drift. The work of the medical profession should be such as to attract the brightest youths in the country. We must recognize that the outlook of the medical profession, though at present somewhat dismal, is merely a transition stage which will soon pass away. The sands of time may be running down, but we hope to invert the hourglass, and trust that there may be a grand to-morrow and a bright hereafter.

"Whatsoever thine hand findeth to do, do it with thy might; for there is no work, nor device, nor knowledge, nor wisdom in the grave, whither thou goest."

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Address in Medicine,

DELIVERED AT THE

EIGHTIETH ANNUAL MEETING OF THE BRITISH MEDICAL ASSOCIATION

BY

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THE RELATIONS OF THE CIRCULATION.

THE honour of delivering the Address in Medicine, which, by the grace of the Council, has fallen to my lot, is the highest distinction, in my judgement, at the disposal of that body. My grateful appreciation of the favour shown to me is attended by the reflection that no privilege can be divested of responsibility; it is my duty to turn this opportunity to a useful purpose, so far as lies in my power. As most of my life work has lain in the observation and investigation of the circulation, it is only to be expected that in a consideration of the problems it presents lies my best hope of practical utility. Another strong influence draws me also in the same direction. Six years ago, at our meeting in Canada, you, Sir, when occupying the position now accorded to me, chose for your subject: "The Circulation viewed from the Periphery." Many problems arising out of your suggestive remarks forced themselves upon my mind while listening to your words—problems mostly concerning the manner in which the circulation is brought into relation with the body at large—and to-day it seems fitting, while you preside over us, to make an effort to answer some of the questions springing from your statements and still claiming our attention.

It is possible—nay, even probable—that such an attempt may seem too ambitious; the subject is at once so extensive and so elusive. In the hope, nevertheless, that good may somehow come from honest inquiry, and with the assurance, moreover, that any shortcomings will be leniently judged, my desire is to lead you with me to some of the intricate and perplexing paths in the field of modern medicine. If the pursuit of science be indeed, as we believe it to be, a pilgrimage in quest of truth, it is manifestly incumbent on us to discover what is its nature and where it is enshrined. Modern physiology had its birth in the central facts of the circulation, and numerous researches on that subject during our own epoch—the age of scientific

medicine—have given abundant proof of earnestness in the search.

In considering some of the recent additions to our knowledge, whether gained in the hospital or in the laboratory, it is more than likely that many of the thoughts about to unfold themselves will be to my hearers in no sense novel. Certain are, indeed, current coin; all have for some years been in the air. A certain amount of hesitation in advancing ideas which seem to reflect upon ourselves a flavour of originality is only natural; most of us tremble lest we fall into the ranks of those who, by regarding the "stepping stones of their dead selves" as rocks upon which others are still reposing, become the victims of self-complacency.

The complex mechanism by which the balance of the circulation is maintained has, during the whole modern period, been the subject of untiring research. The student has not been contented with fleeting phantoms, like "a dream within a dream"; he has yearned after facts and has longed to reach down to the bedrock of certainty. Amongst the objects which have aroused the patient enthusiasm of the worker, the connexions between the central and peripheral divisions of the cardio-vascular system, and the relations between the whole of that system and the body at large, have furnished objects of investigation absorbing his energies. In recent years a wealth of reward has been vouchsafed to him.

Nature is not ungenerous. She does not hide herself with the veil of Isis; she is ever willing to reveal her secrets to the humble suitor. Some of the appearances she presents may not be clear at first, but in time their hidden meaning is grasped. The end of the quest can never be gained by incantation; only by dint of patient and ceaseless effort is the goal won. Without facts, often gathered with painful effort, all our arguments are in vain. Do you remember the tradition of Pietro di Medici, unworthy successor of Lorenzo the Magnificent, who ordered Michael Angelo to fashion a statue of snow? The story has aroused the scornful contempt of four centuries, and may be traced in the burning words of Mrs. Browning and Mr. Ruskin. In similar fashion, the man of science who is asked to devote his mind to discussion without permanent truths wherewith to reason, is in the same position as the great sculptor, when he was commanded to carve a figure out of melting material.

The part played by the circulation in the integration of the organism is a natural subject for our thoughts in this city, where the author of the fascinating Silliman Lectures presides over the domain of physiology. The subject must be admitted to be a very large one, as it does not only include the consideration of the connexions of the central and the peripheral portions of the cardio-vascular system, but, as already suggested, the relations of the circulation as a whole to the body at large. It comprises the nature of the actions and reactions continually in operation, and the character of the stimuli and responses likewise constantly at work.

The circulation in all the higher animals may be regarded as based upon, or concerned with, four primary groups of principles. It is based upon mechanical arrangements which form the foundation for all its operations. It requires chemical changes, by which it is maintained, and for which it provides possibilities, by transference of matter. It is modified by glandular secretions, which profoundly alter its mechanism and chemical processes. It is affected by nervous agencies which deeply influence the performance of its functions.

When we gaze upon the long line of being through which the mammal has been evolved we can discern certain different stages of development, physiological no less than morphological. Amongst the simple organisms belonging to the protozoa, physical and chemical agencies alone are required—simple structure and function are alone brought into play; amongst the complex beings constituting the metazoa, glandular and nervous influences make their appearance with ever-increasing complexity—as we arise in the scale of life elaborate structure and function are necessary.

To which part of the masque of life shall we wend our way in search of observations with which to illustrate the subject? Whithersoever we turn our eyes we can see but a small part of the drama at once. We do not yet stand "upon a Peak in Darien." We can find examples of our meaning in the growth of youth and the decline of age, in conditions of health and states of illness. We shall have occasion, in looking into certain processes which are to occupy our attention, to trace out the development of nervous and glandular agencies in their evolution as well as involution; and it will be necessary for us also to glance briefly in passing at some particular diseases which will be helpful in lighting the path of inquiry.

Many stages of being in the evolution of the mammal are analogous to phases of life in the development of its individual representatives. The analogies involve structure as well as function. In the newly born there is not merely disproportion in the size of different parts and organs as compared with the adult, but there is also difference as regards function. It would serve no useful purpose on this occasion to dwell particularly on the infantile divergences from the normal of adult life as regards size and weight; but it is of importance to linger over certain deviations in function. The heart of the baby, in relation to the weight of its body, is considerably larger—expressed in percentages of total weight it is almost 0.9, as compared with a little over 0.5 in the adult—almost double; even more striking is the fact that the frequency of the heart beat is much greater, being from 130 to 140 per minute—roughly speaking, double that of the adult; the whole circuit of the blood is therefore traversed in a much shorter time—rather more than one-half. It therefore follows that the blood is renewed in the tissues of the baby with greater rapidity than in the adult. The total amount of blood, as compared with body weight, is considerably larger in the baby than in the adult; and as the respiratory work, although increasing absolutely with the growth of the body, is nevertheless relatively greater in early life, the absorption of oxygen is much more active than the production of carbonic acid. Metabolism, as the result, is extremely active within a few days of birth.

The glandular system soon after birth shows some interesting contrasts to the normal of the adult. The lymphatic system is extremely prominent, and the lymph circulation remarkably active. The thymus body increases in size up to the second year; from which point, as a rule, it undergoes retrogressive changes. The thyroid gland is larger in the baby than in the adult; while, on the other hand, the spleen is slightly smaller. This is what might *a priori* be expected; anabolism is in excess of katabolism. The glands which yield an external secretion show variable activities in the baby. The saliva, for example, is very scanty until dentition begins; it is also less active in the digestion of starch than is the case in the adult; on the contrary, the gastric secretion has adequate peptic powers; the pancreatic secretion has active tryptic functions, although the amylolytic power is feeble.

The first epoch of life is marked by the onset of dentition; and it may be held that, until the permanent teeth are nearly complete, this epoch is still existent. During it the infant passes through childhood into adolescence. Soon after the practical termination of the permanent dentition another great epoch of life takes place, and with it a new phase of activity sets in. This is conditioned by the development of the reproductive organs, and results in sexual differentiation, hitherto potential, but now functional. Although "The Salique Law of Nature" shows itself from the earliest period, even at birth, yet the differences between the sexes, especially in respect of external characters, occur in relation to the advent of reproductive possibilities.

From the commencement of this epoch until the end of maturity and the commencement of decline, the changes are so slight as to be almost imperceptible; but in the fifth decennium, in most persons of either sex, alterations both in structure and function become obvious. The general outcome of these changes may be stated in broad terms as a tendency on the part of both sexes towards each other; in other words, there is an approximation in each to a common type. It cannot be doubted that the divergences from such a common type during adolescence, and the return towards it during senescence, are determined by the functional activity of the reproductive glands; the recent work of Geddes and Marshall, although on different lines, gives clear evidence of this fact.

As old age advances, along with a gradual weakening of the muscular and nervous apparatus, there are at once

external and internal changes of the most interesting kind, and the metabolic activity of the body, which in youth not only balanced the daily waste, but added new material, and in adult life was sufficient to meet the demands with ease, becomes so impaired as to be unable to sustain the frame entirely. It is probable that every tissue in the body participates in these retrogressive metamorphoses, but there can be no doubt that the glands, heart, and vessels play the most important part. In the shrinking of the skin, the loss of its appendages, the tendency to calcareous and fatty degenerations, we see the effects of such changes, and about the tenth lustrum certain degrees of a myxoedematous tendency are extremely common. From this point the changes follow with increasing rapidity, until there ensues the final phase, so beautifully decribed by the Hebrew preacher and the Roman poet.

How growth, equilibrium, and decline are related to the circulatory, glandular, and nervous systems, some attempt at explanation will, in the following remarks, be made. The disturbances of the normal processes by the incidence of disease, whereby new chemical and biological problems are involved, will also receive our consideration.

Let me carry you now in thought, before entering upon the glandular mechanism, to some examples of the wonderful nervous influences which preside over the heart and vessels, linking them up with the rest of the body. The whole life of an animal, according to Starling, "may be looked upon as a series of reflex actions." Nowhere is this more obvious than in the relations existing between the nervous and the circulatory apparatus. Of this fact a few simple illustrations may be cited. The idea of profound disorders of circulatory relations through vasomotor disturbances has been gradually growing up since the discovery of the nervous connexions controlling the circulation. The observations of Landois on the reflex origin of anginous pain, and of Nothnagel on its connexion with vasomotor contraction, as well as the more recent work of Pal on vascular crises, furnish sufficient evidence of this proposition. The receptive field, as Sherrington shows, presents a remarkable contrast between the afferent tracts of the somatic and splanchnic realms; there is a wonderful richness in receptors of the former, or exteroceptive, as compared with the remarkable poverty of the latter, or interoceptive field. Mackenzie and Head have taught us how splanchnic impulses reaching the receptive and perceptive centres are referred by them, as the result of their development, to the somatic area. Nowhere is this truth more clearly manifested than in the various degrees of cardiac pain.

Since the early researches of our countryman, Lower, into the nature and cause of dropsy, the matter has been the preoccupation of many an anxious inquirer. One of the first steps in our modern knowledge of this important subject was the discovery by Ranvier that stasis in a limb is followed much more certainly and much more quickly by oedema if the nervous influence of the part be withdrawn. The close association of oedema and glossiness of the skin with neuritis is now universally known, and is of analogous nature. One of the most important contributions within recent years is that of Ninian Bruce, who has shown that the initial dilatation of the vessels in the early stages of inflammation depends upon the influence of the local nerves, and that it probably is of the nature of an axon reflex.

The heart and the vessels are subject to direct and reflex influences, now generally recognized as entering by every channel and flowing from every part of the body. The effects of emotion, such as joy and grief, pleasure and pain, rage and fear, are exerted directly through the action of the upper centres upon the lower. The majority of nervous influences, however, are reflex in their nature. Some of these are restricted in their localization—the receptor, the conductor, the effector consisting in the different parts of a single neurone. Such are obviously the alterations which take place in a local hyperaemia. Between a simple vasomotor reflex like this, on the one hand, and such profound and extensive disturbances as may give the widespread changes of angina pectoris, there is no abrupt transition—simply a complete chain of many links. Let me cite two recently described reflex arrangements. One of the most interesting of these reflex influences is that which we may hold as proved by Stewart in the case of aortic incompetence. The series of brilliant observations upon which he has based his theory has rendered it beyond doubt. Another admirable example of reflex influences recently studied is that suggested by Hill to explain the now generally recognized alteration in the relative arterial pressure of the arm and leg in the same disease. The arterial pressure is normally higher in the leg than in the arm, but the difference of pressure in health is very far exceeded by that which occurs in aortic regurgitation, and for this Hill has suggested that the arterioles of the leg undergo reflex contraction in order to preserve the balance of pressure in the centres at the base of the brain.

The instructive experiments of Cushing, carried out by introducing fluid into the cranial cavity, have taught us, in the most convincing manner, how intimate is the relation between cerebral compression and arterial pressure. Increased intracranial pressure in its advanced stages produces cerebral anaemia, and the centres in the medulla oblongata respond, as is necessary for their very existence, to the stimulus created by want of blood. The vasomotor centre raises the arterial pressure to overcome the compression of the centres, and at the same time the vagus centre is excited, so that the pulse-rate becomes reduced. It is not too much to say that by these valuable investigations Cushing has not only greatly widened our scientific knowledge, but has also profoundly modified our practical management of cerebral diseases. A passing reference may be permitted to the remarkable work of Crile on the state of the circulation, especially of the arterial pressure, in shock, from which we have learnt much. The recent investigations of Gray and Parsons have also assisted greatly in the elucidation of this subject.

Hitherto there has been a tendency to regard the vessels of the heart and the lungs as beyond the influence of the vasomotor system. Until lately, little experimental evidence has been obtained of any vasomotor mechanism in the pulmonary and coronary arteries. The recent investigations of Argyll Campbell, however, show that in the case of both systems the administration of pituitary extract by perfusion causes marked and prolonged constriction. This contraction is by the physiologists regarded as evidence in favour of vasomotor innervation of the arteries. More recently, Brodie and Cullis have proved beyond all possibility of doubt that the coronary arteries have both vaso-constrictor and vaso-dilator nerves, both being derived from the sympathetic system; the former are, as would be expected, the more powerful.

If we desire an instance in which to find an example of the intimate connexion between circulatory and glandular changes, we have not far to seek—it is always to our hand in Graves's disease. Just as in the case of glycosuria, we find hereditary, neurotic, and traumatic factors at work; its invariable association with glandular and circulatory changes, moreover, has long been known. In exophthalmic goitre there are symptoms connected with the digestive system due to catarrhal and hyperaemic conditions; of the glandular system in thyroid enlargement, and less frequent alterations in the thymus, the pituitary, the suprarenal, and the lymphatic glands, as well as the spleen; the blood often reveals the presence of anaemia and, less commonly, of cyanosis, while varying degrees and types of leucocytosis are not infrequently encountered; the circulation does not merely reveal the presence of increased frequency of pulse-rate, but of very varying degrees of arterial pressure, while the heart may manifest considerable dilatation, with or without hypertrophy; the renal conditions may be largely modified, not only by the existence of polyuria, but of albuminuria or of glycosuria; the integumentary system may be the seat of the most multiform rashes, and also of atrophic changes particularly affecting the cutaneous appendages; in the nervous system are to be found remarkable divergences from normal conditions—sensibility diminished, perverted, or increased, motility usually affected in the direction of irritable weakness, with exaggeration of the reflexes and responses, diminution of muscular energy, shown by weakness of the movements and tremulousness of the muscles and disturbances of the delicate processes of co-ordination especially as regards the eye, vasomotor and visceral changes, and, above all, profound alterations in the higher cerebral functions—such are the outstanding features of the affection. It will certainly be useful to look further,

into certain matters connected with this interesting disease. A few instances of emotional causes may be given.

Debove tells us of a sailor, who fell into the sea at Marseilles, and thought he was about to be drowned. Almost before he was out of the water he began to show symptoms of Graves's disease. Cléret mentions an instance produced by the sudden and tragic death of a husband. In my own experience similar cases have not been infrequent. A lamplighter, after Saturday evening libations to one of his gods, in whose worship he showed zeal worthy of a better cause, did not wake up sufficiently early on a bright Sunday morning to be on his beat at the appointed hour. Living two miles from the scene of his labours, he ran the whole distance, and then proceeded, in the old fashioned method, to put his lamps out, by using a ladder for each. On the Monday morning he presented himself before me at hospital as an out-patient, and already symptoms of exophthalmic goitre were evident. A washerwoman, while standing at her tub, received a great fright by the roof of her house falling in upon her, and she entered my ward two or three days later with pronounced features of Graves's disease. Traumatic instances are frequent. Delorme, for example, tells us of two officers who on parade fell from their horses on to their heads, and shortly afterwards were victims of the disease. Many reflex causes for the affection have been found. Irritation connected with the mucous membrane of the digestive, respiratory, renal, and reproductive systems plays an undoubted part in causation; when these conditions are relieved, the affection is greatly ameliorated. Are we to regard such emotional traumatic and reflex cases as certainly due to purely nervous causes? By no means.

The facts showing the causal nexus between the thyroid gland and Graves's disease have, in recent years, greatly accumulated. There is not merely the almost constant association of thyroid enlargement with the disease, but there are the further facts that it sometimes follows simple bronchocele, and not infrequently precedes myxoedema. The experimental production of symptoms closely resembling, if not indeed absolutely identical with, Graves's disease in different mammals, and the aggravation of symptoms produced by the administration of thyroid extract, through misdirected zeal, help us greatly in understanding the connexion.

It has long been known that the thymus gland undergoes revivescence in Graves's disease, sometimes adding greatly to the danger of surgical intervention. Some new light has been thrown upon this subject by the investigations of Bircher. He implanted fresh thymus gland into five dogs, and found very definite results. Within twenty-four hours there was excitement and thirst; in three days there was distinct tachycardia; by the fifth day exophthalmos was present; within twenty-eight days there was obvious goitre.

Even the ardent supporter of the nervous origin of the disease admits that, although the structural lesion or the functional disturbance of the thyroid gland is not the cause of all the symptoms, it must be recognized that it plays an important part in the genesis of a great many of them. On the other hand, the keen adherent of a purely glandular cause for the disease is forced to admit that many of the symptoms of the disease, while primarily due to thyroid activity, must be brought about by the intervention of the sympathetic system.

The greatest outflow of the sympathetic fibres from the cord, as has been shown by the investigations of Gaskell and Langley, corresponds remarkably with the position of the greatest number of cells in the intermedio-lateral tract. The intermedio-lateral tract is found at three levels of the spinal cord—the upper cervical; the lower cervical, dorsal and upper lumbar; and the lower sacral region—one of the finest, as it was, alas! one of the latest, contributions made to neurology by Alexander Bruce, showed definite lesions in this tract. Changes in nervous structure have often been described before—neuritis of the cervical sympathetic by several observers; haemorrhage into the floor of the fourth ventricle by Cheadle and Hale White; bulbar haemorrhage with the formation of colloid bodies by Grainger Stewart and myself, as well as many obviously accidental lesions. But it is my pleasant duty to state clearly that the labours of Bruce have thrown a new light on the subject. In a case of the disease he found capillary haemorrhage in the lateral columns of the second, third, and fourth thoracic segments of the cord, with degeneration of the cells of the intermedio-lateral tract of these segments. Now, as Langley has shown, dilatation of the pupil, protrusion of the eyeball, and acceleration of the heart, are produced by stimulating the sympathetic roots of these segments.

The question of causation seems to many observers associated with the rapidity of development. Such instances as those mentioned above, in which the onset was dramatic in its suddenness, have often been considered as too swift in genesis for aught but a nervous cause. The celerity with which analogous symptoms were developed in dogs after the experiments of Bircher has given us new views on this matter.

In almost every respect the group of affections, for the explanation of which our thanks are due to the perspicacity of Gull, stands in direct antithesis to Graves's disease. In the various forms of myxoedema, no matter how produced, we have a group of diseases contrasting most markedly with exophthalmic goitre. While the digestion and the blood may show changes somewhat analogous to those referred to in Graves's disease, there is, on the whole, less tendency to leucocytosis and anaemia. The circulatory symptoms are entirely different, as diminution of the pulse-rate and elevation of the arterial pressure are usually found, and although the heart is often hypertrophic, it has less tendency towards dilatation. Polyuria, albuminuria, and glycosuria may be found in both; but the condition of the skin and subcutaneous textures is distinctly contrasted in the two affections, except in respect of some loss of hair, and even nails, in some cases of Graves's disease. The increased bulk of the subcutaneous tissues, and the singular alteration in consistence exhibited by them, are characteristic points of divergence, while the striking alteration in appearance, resulting in the stolid, squat aspect of myxoedema, as contrasted with the alert and slender appearance of Graves's disease, is most marked. When we enter upon a comparison of the nervous conditions in these two diseases we are quite as much impressed. Instead of the eager nature, and neurotic features of Graves's disease, we have an apathetic character with lethargic appearances in myxoedema.

Thanks to the labours of numerous inquirers, amongst whom Murray especially deserves our grateful acknowledgements, we now have a firm foundation of knowledge for our discussion of the disease. We recognize that in some way it is intimately associated with the condition of the thyroid gland; the exact relations will appear in the sequel. It is clearly understood that the myxoedematous symptoms are dependent upon deficient thyroid activity, which may be the result of arrest of development, occurrence of disease, or surgical adventure.

Ever since the description of acromegaly by Marie, this singular affection has had a remarkable fascination for my mind. The enlargement of the head and extremities—particularly of the lower part of the face, the hands, and the feet; the marvellous adaptations whereby the increased weight of the head is compensated for by a decided hypertrophy of the cervical vertebrae, and that of the lower jaw by a remarkable enlargement of the temporal fossa and ridge; the strange alterations in structure of the internal viscera, which have recently been so thoroughly studied by Geddes; and the striking alterations in the field of vision, even now occupying the attention of Evans and Traquair, have invested this disease with a halo of interest which, notwithstanding the uncouth appearance of the victim, may almost be termed that of romance. When we further consider the most interesting suggestion of the lamented Cunningham, now abundantly verified, that gigantism and acromegaly are the same disease, as it affects early years, before the union of the epiphyses and diaphyses, or adult life, when ossification is complete, we are led to regard the condition as remarkable. We may assume without fear of contradiction that acromegaly is connected with alterations, either structural or functional, in the pituitary body; the exact relation of these to the affection will be subsequently dealt with. In an address given by me to the Medical Society of London some years ago, the processes of adaptation and compensation shown by this interesting disease were fully dealt with; and in a previous address to the Medico-Chirurgical Society of Norwich, the speculation was thrown out that probably

the pituitary body would be found to exert an action upon other glands concerned in growth—further, that certain cells of the gland might be assumed to preside over particular parts of the body. In no other way does it seem to me possible to explain some of the extraordinary cases of local hypertrophy of extremities, which must be regarded as partial gigantism, or localized acromegaly.

The exact method by which the pituitary body regulates growth is still unknown. We shall in a few minutes review the relations between the structure and the function of the gland. In this place it must be allowed that we do not know how it acts. Whether it exerts its influence directly through the vessels, or by means of the vessels and their nerves, or through a power of stimulating or inhibiting other glands, is yet unknown. My own belief has always been that its main effect is a power of stimulating other glands to activity. In this way it seems possible to account for the great strength attendant upon the excessive growth commonly seen in the early phases and for the profound weakness invariably found in its later stages. The very interesting autobiographical sketch by Leonard Mark repeats the experiences, as regards this aspect of the disease, of every one of us who has ever seriously applied himself to the study of the disease.

Another most interesting affection, in which the glandular apparatus participates—may, indeed, be said to play a predominant part—is Addisonism. Ever since the discovery by Addison of the constant relations between pigmentation of the skin, weakness of the circulation, and disturbance of the digestion and morbid changes in the suprarenal glands, this condition has been universally recognized. It is, however, only in our own times that we have learnt in what respect the obvious symptoms are related to the glandular alterations. We now know that, when the usual fibro-caseous changes occur in the whole suprarenal gland, involving its medullary, as well as its cortical portion, there is a complete picture of Addison's disease, with discoloration, low arterial pressure, feeble heart impulse and weak cardiac sounds, digestive disorders, and profound asthenia, showing the three important groups of symptoms. But we are now sufficiently conversant with the affection to know that if there be an alteration of the cortical portion alone, there will be pigmentation only, with little or no change as regards the digestive, circulatory, or nervous systems. That, on the contrary, when the medullary portion is alone involved, there will be great reduction of arterial pressure, attended by loss of tonicity and contractility of the heart, the result of which is profound asthenia.

The opportunities afforded by our new research laboratory in connexion with the medical wards of the Royal Infirmary have enabled us to obtain a very considerable number of electro-cardiograms in exophthalmic goitre, myxoedema, acromegaly, and Addisonism. Some very interesting facts have thus been discovered, which will, in due course, be fully described. All that need be said in this connexion at present is that there appears to be excessive energy along with increased frequency in Graves's disease; diminished electro-motive force, along with reduced frequency, in myxoedema; very variable conditions, according to its stage, in acromegaly; and, from first to last, remarkable loss of energy in Addisonism. There is a natural tendency to scepticism as regards the possibility of measuring the electro-motive force of the heart; but we shall assuredly, before long, be in a position to do so, as we can accurately estimate the resistance of the tissues and approximately the electro-motive energy generated by the cardiac pulsations. It will not be long before this is done in every case.

These affections, each in its own way so full of interest, have been chosen as the main theme of our discussion, for the reason that they furnish excellent opportunities for inquiry into the mode of operation of normal and morbid processes. The application of our new knowledge must now be attempted.

All organs—in fact, all tissues—receive from the blood certain substances, and yield in return others. Every function of the body, even a simple muscular contraction, furnishes material which is restored to the blood; much of this, however, is of the nature of waste. The glands produce special substances, to which alone the name of secretion can be properly applied. All of these glands are now assumed to yield an internal secretion; many, in addition, furnish also an external secretion. As an illustration, let me remark that the external secretion of the pancreas has for a long time been recognized as one of the most potent factors in the primary digestion, but it is only recently that the conception has arisen of internal secretion by the same gland—an internal secretion which is absolutely essential for the maintenance of carbo-hydrate metabolism.

The production of prosecretin by the intestinal mucous glands, discovered by Bayliss and Starling, a substance which, in the presence of acid becomes secretin, and stimulates the flow, both of the pancreatic and biliary secretions, has been the first step in our knowledge of a new chapter of physiological chemistry. Secretin is obviously a substance endowed with the power of influencing tissues and organs other than those from which it is itself derived. As a stimulant or excitant it has received from Starling the name of "hormone." Many glands in the body have the power of producing hormones, and year by year our knowledge of the subject is becoming more extensive and more thorough. Amongst these organs three are intimately concerned with the circulation, and to them let me (even at the risk of being tedious) for a few minutes call your attention.

The thyroid gland has, since the time of Schiff, been recognized to be closely associated with the nutrition of the body. It has been known from experiment that removal of the thyroid gland, and, by clinical observation, that its atrophy, result in conditions strictly analogous; and Schiff, Murray, and other observers have shown that the results of removal could be obviated by grafting portions of the gland. The further discovery that administration, whether by skin or mouth, of thyroid gland or any of its preparations brings about recovery from such affections, has proved the effect of the gland to lie in the production of an internal secretion, as was undoubtedly upheld by Schiff. As the result of a series of experiments on feeding with thyroid, Fordyce is inclined to believe the effect of large doses to be partial inactivity of the gland, which seems to confirm the observations of Carlson, Jacobson, Thompson, Marine, and Leuhart.

The internal secretion of the suprarenal capsules has been more recently discovered. Oliver and Schäfer found that extracts of the suprarenal bodies produced extreme contraction of blood vessels, even in very small doses. The administration of a small amount of suprarenal extract injected into the blood vessels is followed by the production of a rise of arterial pressure, due especially to constriction of the arterioles. The effect is sometimes obscured by stimulation of the cardio-inhibitory centre in the medulla, leading the heart to beat less frequently by impulses passing down the inhibitory nerves. If the vagi have been previously cut, or their action suspended by atropine, the rise of blood pressure may be very great. The effect of such a dose lasts only a few minutes; it may, however, be repeated over and over again. It has been found that the effect is brought about directly by the action of the drug on the muscular tissue of the heart and arteries. There is also stimulation of unstriped muscular fibres in many different situations—the intestinal, vesical, and uterine, as well as of the dilator of the pupil, and of the muscles of the hairs, and of certain glands, for example, the submaxillary. In fact, the results of suprarenal injection closely resemble stimulation of the sympathetic nervous system. But it has been proved that the active substance does not exert its influence upon the sympathetic nervous system itself, but only on the tissues to which the sympathetic nerves are distributed; it produces equally strong effects if these tissues are previously deprived of their sympathetic supply. It is interesting in this connexion to recall that the cells of the suprarenal medulla are developed in the embryo from tissue common to the sympathetic ganglia and to themselves.

In addition to its action upon the arterioles, suprarenal extract increases the tone of the muscular system in general. In excessive doses it produces deleterious results—marked acceleration and augmentation of the heart beat, frequent and shallow respiration, fall of temperature, paralysis of the limbs, especially the posterior extremities, glycosuria, and eventually cessation of respiration—such are the effects of overdoses.

For many years the pituitary body has occupied much of my attention, especially in regard to acromegaly and

its congeners. The structure of the gland has been particularly studied by Andriezen and Herring. The earliest investigations to ascertain whether the pituitary body has any active functions were those of Oliver and Schäfer. They found that aqueous or saline extracts, which did not lose their activity even on boiling, produced rise of arterial pressure by effects upon the peripheral arteries, which are caused to contract strongly. They did not find any marked effect upon the rate of the heart, and they did not observe any difference in action by the different parts of the gland. Howell discovered that the anterior part of the gland has no physiological effect when injected into a vein, while the posterior produced the effects on the vessels described by Oliver and Schäfer. Howell further observed diminution of the rate of pulsation, and found that if a second dose be administered within a certain time after the first the effects are not repeated. Schäfer and Swale Vincent repeated Howell's observations, confirming them in almost every particular, but finding that the diminished frequency of the heart is not constant. Schäfer and Magnus shortly afterwards noticed as one of the results of intravenous injection a marked diuresis. Schäfer further, in association with Herring, discovered that an aqueous extract of the posterior part, including the pars intermedia, has a specific action both upon the vessels and cells of the kidney.

Herring showed that the anterior lobe of the pituitary body has the structure of a gland secreting into blood vessels, and that the posterior is composed of nervous tissue, surrounded and invaded by epithelial cells of the pars intermedia. He stated that this posterior lobe may furnish secretion into blood vessels, but holds that its arrangement and structure suggest a gland pouring its products into the infundibulum, and thence into the ventricles of the brain. He found that extracts of the anterior lobe have no immediate physiological action when injected into blood vessels; that extracts of the posterior lobe of birds and teleostean fishes have an action similar to those in mammals—that is, rise of pressure, expansion of kidney, and diuresis. Herring further set to work to discover the relation between the substance in the pituitary body and the colloid material of the thyroid gland which resembles it. He found that thyroidectomy produced no effect on the anterior lobe of the pituitary gland; but that, in the nervous part of the posterior lobe, and in the laminae forming the floor of the third ventricle, glandular, hyaline, and colloid bodies become very numerous. The significance of these changes is, as yet, unknown.

Halliburton, Candler, and Sikes fully confirmed the observations of Herring as regards the functions of the pituitary body, and were of opinion that the substances in the posterior lobe responsible for the effects are two in number—one pressor, and the other diuretic. As regards vicarious relationship between thyroid and pituitary, they carefully sought for iodine in the latter organ, with negative results. Simpson and Hunter have also attempted to investigate the possible vicarious relationship between the pituitary and thyroid glands, and, so far as the presence of iodine is conclusive, they discovered no trace of iodine in a large number of pituitary bodies, after thyroidectomy.

Argyll Campbell studied the effects of suprarenal and pituitary extract on the blood vessels. He found that suprarenal extract causes marked constriction of all the organs, with the exception of those of the heart and lungs. In the heart it produced slight constriction, and this was more evident in the case of the lungs. Pituitary extract contains at least two substances—one causing contraction, and the other relaxation. Each is capable of producing its characteristic effect on all the arteries, except the renal, where contraction is hardly ever obtained, the result being almost always relaxation.

The functions of the pituitary body formed the subject of the Croonian Lecture of the Royal Society, delivered three years ago by Schäfer, in which, after reviewing the various facts which have been mentioned, he described the effects of extirpation—the result of which, up to the date of the lecture, was uniformly death within forty-eight hours. Death was not the direct result of the operation, but was caused apparently by the loss of pituitary secretion. Paulesco, as well as Reford and Cushing, have performed a large number of experiments of this kind. As the result of a long series of feeding operations, Schäfer discovered that the use of the anterior lobe favours growth, and apparently the fact of grafting pituitary bodies is similar. He summed up the actions of the pituitary body as follows:

The pituitary body consists of three parts: (1) Anterior, formed of vascular glandular epithelium; (2) intermediate, formed of a less vascular epithelium secreting "colloid"; (3) posterior, consisting mainly of neuroglia, but invaded by the colloid, which passes through it into the infundibulum of the third ventricle. These parts differ from one another in function.

The function of the anterior part is probably related to growth of the skeletal tissues, including cartilage, bone, and connective tissue in general. The chief evidence in favour of this is derived from the fact that hypertrophy of the anterior part is associated with overgrowth of the skeleton and of the connective tissue in growing individuals, and of the connective tissues especially in individuals in whom growth has ceased.

The function of the intermediate part is to produce a "colloid" material which contains active principles or hormones acting upon the heart, blood vessels, and kidneys. Probably there are several such hormones acting upon blood vessels and kidneys independently, and also acting antagonistically, so that, according to circumstances, either a rise or fall of blood pressure, an increased or diminished secretion of urine, may be produced, and the effects on the kidney may be independent of those on the blood vessels. The hormones which appear to be most active are those which produce contraction of the blood vessels in general, with dilatation of the renal vessels and increased activity of renal cells, but there appear to be others which cause constriction of renal vessels and diminished activity of renal cells: the effects of these latter are generally less lasting. There is also usually an inhibitory effect produced on the heart.

Herring showed that in the elasmobranch fishes the secretion is poured directly into the blood vessels. There is no evidence of any direct secretion by the pituitary body into the brain ventricles. This is a most interesting fact, contrasting with the state of matters in the teleosteans.

In a further communication, Simpson and Hunter discovered that complete removal of the thyroid gland does not, even after five or six months, lead to the appearance of iodine in the pituitary body; this does not support the Rogowitsch theory, that in thyroid insufficiency the pituitary vicariously takes on its function.

In studying certain aspects of the mystery of life we are struck by an apparent lack of uniformity in the economy of Nature. At times there is a lavishness of structure and of function which to our present knowledge appears to be almost wasteful. This cannot be better exemplified than in the abundant profusion afforded by the essential reproductive processes of every living being, whether vegetable or animal. On the other hand, Nature appears to work in many directions by methods which indicate a distinct parsimony. This was well shown by Rolleston, who, in his Oxford Address, when applying Newton's statement: "Natura nihil agit frustra; et frustra fit per plura quod fieri potest per pauciora. Natura enim simplex est, et rerum causis superfluis non luxuriat"—pointed out that a law of parsimony may be found in many structures of the body. "She is prodigal in the variety of her adaptations. She is niggard in the invention of new structures." Rolleston suggested that where an organ can be diverted from one purpose and put to discharge another function, Nature will spare herself the expense of forming a new organ, and will adapt the old one to a new use; where she can employ a lowly organized structure, such as elastic tissue, she will spare herself the manufacture of a highly organized structure, such as muscle; where she can utilize matter that would otherwise be wholly refuse, Nature exemplifies this law by turning waste substances to useful account. In our study of glandular processes we find Nature lavish in her general provision, but parsimonious in particular instances at times.

Some of the changes in glandular activity, resulting in excess or defect of secretion, may be caused by processes which, in the light of our present knowledge, appear to be idiopathic; alterations brought about by particular diseases are much more easy to grasp, and a new chapter in pathology has recently been opened by certain discoveries regarding the effects of acute diseases on glandular tissue. Dubois showed that, after inoculations with

cultures of diphtheria and other diseases, marked changes were found in the suprarenal glands. Langlois found, after diphtheria inoculation, that the suprarenal glands were hyperaemic, with diminution of the pressor action. Luksch ascertained, after injection of diphtheria cultures, that the pressor action of extracts from the suprarenal glands was wholly, or almost wholly, absent. Elliot discovered that exhaustion of the suprarenal glands is demonstrated by absence of the yellow staining action with bichromate salts, which was found within thirty-six hours of diphtheria poisoning. Humphrey Rolleston suggested the employment of adrenalin to prevent heart failure in diphtheria, and Meyer also advocated its use in this disease.

James Ritchie and Ninian Bruce have found that many of the sudden deaths which occur in diphtheria and other acute infections are produced by profound changes in the suprarenal glands. After death from the experimental production of diphtheria by inoculation, there is great swelling and hyperaemia of the suprarenal glands, and the medullary portion becomes completely exhausted of adrenalin. The exhaustion is complete in the less acute cases, while in the more acute there is very great diminution in the amount of adrenalin, from a condition of relative suprarenal inadequacy. The presence or absence of adrenalin is easily shown by placing the fresh glands in a solution of potassium bichromate and formalin. If the medullary cells take on a yellow stain, they contain adrenalin; they do not stain at all if adrenalin is absent. No other tissue in the body stains in this way, and the structures which thus react are appropriately termed "chromaffine cells" on account of this peculiar property. This exhaustion of the suprarenal glands is not specific for diphtheria toxaemia; it can also be produced by pneumococcal, streptococcal, staphylococcal, and other toxaemia. It may even be produced by any condition which throws prolonged strain upon the suprarenal gland.

In the lower vertebrates the cortex and medulla of the suprarenal bodies are separate organs. In birds they are irregularly mingled; in mammals alone does the cortex surround the medulla. The origin of the cortex and the medulla is of real import. The development of the medulla is very interesting and important. A very good description of this was furnished by Kohn. At an early stage small masses of cells are to be found on each side of the vertebral column. These cells are all identical. As they increase in size they suddenly divide into two different types. The one type grows slowly and develops into the ganglion cells of the sympathetic ganglia; the other develops more quickly, and shows the yellow staining reaction with bichromate solutions—that is, it assumes the character of "chromaffine tissue cells." The chromaffine cells and the sympathetic ganglion cells may thus be regarded as twins. The greater mass of these chromaffine cells atrophy after birth, but a few remain (1) in the midst of the sympathetic ganglia; (2) as separate masses, the accessory suprarenal bodies; (3) the largest mass remains and forms the medulla of the suprarenal glands; those in the cervical region form a small glandular mass known as the "carotid body." This manner of development is of profound significance in the relations of the suprarenal body and the sympathetic system. In a forthcoming work by Ninian Bruce, from which he has allowed me to quote, many of these interesting points will be found fully described.

There can be no doubt that the effects produced upon the nutrition of the tissues must be through the intervention of the blood vessels, but the further question arises, Is this influence exerted indirectly through nerves, or directly through chemical agencies? We know that the cervical, stellate, superior and inferior mesenteric ganglia may all be removed without death, and it is therefore clear that the tone of the cardio-vascular system does not necessarily depend upon an intact connexion with the sympathetic nervous system. This is universally admitted, and it must be regarded as the basis of all discussions connected with the relationship of the nervous, glandular, and circulatory apparatus. On the other hand, removal of the suprarenal glands proves fatal in twenty-four hours, and it is perfectly clear that, while life is not incompatible with destruction of much of the nervous control of the circulation, the removal of the structures which produce the chemical pressor substance is not compatible with life. We therefore believe the tone of the cardio-vascular mechanism to be influenced by two factors—nervous and chemical. Removal of the nervous factor is not fatal; removal of the chemical is. We are thus able to realize the full significance of exhaustion of the suprarenal glands in diphtheria, and can see how acute heart failure must be the consequence.

The whole subject of glandular affections is rendered still more complex by certain cases in which they are associated together or pass one into another. Such an instance is to be found in the interesting patient described by Murray, labouring at once under acromegaly and exophthalmic goitre; an almost equally interesting case of my own, in which acromegaly was accompanied by myxoedematous features, belongs to the same category; other combinations of similar nature have been recorded and somewhat complicate the whole matter. We now know that it is not uncommon to find Graves's disease ending in myxoedema; this is comparatively easy to explain, since the increased functional activity of the thyroid gland leads in time to loss of function.

Such reflections bring us back to the point from which we started. Are we yet in a position to decide whether the messengers which carry the impulses to the vessels and the tissues are nervous or chemical? We have seen that certain vascular processes are only possible when the vasomotor nerves are intact, but this is qualified by the further fact referred to—that destruction of the great sympathetic ganglia does not of necessity involve complete loss of vascular tone. As the outcome of certain experiments, we know that the action of hormones is direct. Kenneth Mackenzie has proved that the well-marked galactagogue action obtained from the posterior lobe of the pituitary body, and a few other structures, is by means of the direct effect of hormones upon the mammary gland. That it is not through the direct influence of the nervous system is quite clear, and that the nervous influence upon mammary secretion, which is well recognized, is probably an indirect one, operating, not upon the gland through its nerves, but upon the organs which supply stimulants to the blood, is most probable.

The recent investigations of Ascoli and Legnani are of profound interest. These observers removed the pituitary gland from young puppies. In each case two puppies of the same size (as nearly as possible) were selected—one for experiment, the other for control. In many cases the puppies operated on died two or three days afterwards; but, in the few that survived, the results were remarkable. No further growth took place; the puppy remained a puppy. The size of the body, of the head, of the limbs, remained as at the time of the operation. Ossification and dentition were arrested; the bone not only ceased to grow, but showed defective nutrition; while the nourishment of the whole organism suffered, and the animal only gained in fat. Reproductive development was completely arrested, and changes were seen in the spleen, the thymus, the thyroid, and the suprarenals.

Our understanding of the functions of the pituitary gland have been further extended recently by an interesting observation by Rennie, who describes a case of infantilism which was under his observation during three years, and in which it was found that an endothelioma had invaded the pituitary body, destroying the gland, so that very little of its proper structure remained. The patient was sixteen years old—quite undeveloped, with effeminate voice and other features of infantilism. The arterial pressure seemed high, and there was some polyuria, with headache and vomiting. The diagnosis was of a chronic interstitial nephritis. Harvey Cushing has recorded cases of tumour compressing the pituitary gland, in which the symptoms were mainly renal, and chronic interstitial nephritis was suspected.

We have to admit that there are other possibilities of structural or functional alterations through the influence of chemical processes without the intervention of glandular activities. We are forced to allow such possibilities by the consideration that many glandular changes occur without apparent alteration of structure or function elsewhere. As an example of this let me mention that there are pituitary enlargements without acromegaly. Modifications in viscosity and alterations in osmosis cannot be neglected. It is indeed quite possible that growth is conditioned by

the inherent tendencies of the part, and regulated by the special activities of the cells. Some of them become too large in size for the nourishment of their central protoplasm, and therefore it undergoes necrotic changes. Various perversions of ossification prove this. Again, the supply of nourishment for the cell may be deficient in quantity or poor in quality; while, again, it may be too great in amount or too rich in character. On the other hand, there may be divergences from the normal processes of removal, elimination being too active or too sluggish. As yet we know but little of the effects of such changes, yet they have been recognized through histological investigation. The consideration of this subject has led Geddes to believe that many of the changes found in the long series, beginning with achondroplasia at the one end and terminating in gigantism at the other, are brought about by alterations in the nitrogen content of the blood—probably arising from hepatic eccentricities. He has been led to think that the enlargement of the pituitary body in acromegaly is probably to be regarded as a protective process whereby there is an attempt to regulate the disturbances of the tissue changes.

Simple arrest of development, whether antenatal or postnatal, may be sufficient to produce dwarfism; and, on the other hand, accelerated development may in both phases of existence be the first impetus towards gigantism. Whether such effects are due to an inherent tendency implanted on the tissues, directly or indirectly through the glandular or nervous system, no man can yet say.

At any period of life normal growth and decline may be interfered with by agencies either from without or from within. Alterations in the amount of nutriment; changes in powers of assimilation and elimination; the effects of microbes and toxins—all of these require our most careful consideration. The relative importance to be attributed to the different factors in maintaining the equilibration of the tissue processes is necessarily a subject still in its infancy, but none the less meriting our thoughts.

The most interesting facts ascertained some years ago by Dixon as to the effects upon the circulation of extracts from the heart muscle in various conditions of rest and fatigue show how very powerful are the chemical influences at work in the regulation of function.

When we consider some of the arrangements by which the sympathetic system is linked up with the cerebro-spinal axis we can understand how profoundly the central nervous system may be affected by impulses from the periphery and how reciprocal influences are exerted. Let me mention that the grey rami communicantes appear from experimental work to be composed of fibres which take their origin in the vertebral ganglia of the sympathetic, and that these rami probably carry vasomotor impulses to the blood vessels of the cord; we can grasp the profound significance of the connexion. The fibres of the grey rami seem, indeed, to be relay fibres on the outgoing vasomotor path, recurving backwards and carrying impulses to the vascular supply of the central nervous system. They are, therefore, recurrent, like the fibres described by Magendie as re-curving and re-entering the cord with the anterior roots in order to supply the membranes of the cord with sensibility. Langley and Sherrington consider the fibres of the grey rami entirely post-ganglionic—that is, efferent from sympathetic ganglia, but intended for distribution to the cord vessels.

A paper of the greatest interest, by Elliott, appeared last week. Elliott has found that profound nervous influences, such as fright, produce very definite changes in suprarenal secretion. He is led to believe that the suprarenal glands are played upon by the splanchnic nerves in emotional reflexes with delicate adjustment.

Possibly some of my hearers may be inclined to regard the subject of these remarks as purely academic, and of no practical importance in the world of clinical medicine. There could not be a greater mistake. Every observation that has been cited to-day is of the highest value in the treatment of disease; and although our therapeutic measures are still characterized by unavoidable crudeness of means, there can be no doubt that the views of to-day are much more characterized by singleness of aim and simplicity of method than in any previous epoch of the world's history. It is probable that the art of therapeutics will remain for long one of the most difficult branches of scientific investigation. It is complicated by so many cross currents that absolute certainty is difficult of attainment. Many of our views depend on apparent analogies and indirect arguments. Let us for one moment look at the question of the action of drugs on vessels. Can we be certain that they act on muscle fibres directly, or through nerve endings indirectly? Adrenalin is believed to act on nerve endings, because it only, or mainly, causes contraction of vessels with sympathetic innervation, because it acts almost everywhere else where there are sympathetic nerve ends, and because it no longer contracts vessels after large amounts of ergotoxin, while stimulation of the vasomotor constrictor nerves loses effect at the same time. Digitalis, again, is held to act on muscle because it contracts muscles quite irrespective of the character of the nerves going to them, because it acts on many forms of muscle in large doses, and because it continues to contract vessels after ergotoxin has been given in quantities sufficient to prevent any adrenalin action, or any effect from stimulation of the vaso-constrictor nerves. These questions involve what is, after all, simply a balance of probabilities, as is so clearly stated by Cushny.

The employment of thyroid extract in myxoedema is, thanks to the work of Mackenzie, Murray, and many of their successors, so thoroughly established as to require no remark. The influence of this potent substance upon the nutrition of the body must be explained by its action as a hormone. Whether it acts directly upon glands and tissues, or indirectly through the intervention of the nervous system, cannot at present be determined. Suffice it to say that it influences blood distribution and nutritive possibilities in the most powerful manner. From the practical point of view, you will perhaps permit me, while passing by its obvious uses in clear cases of myxoedema and cretinism, to mention the invaluable service which may be obtained from thyroid extract in several conditions which are apt to miss our attention. Minor degrees of thyroid inadequacy are found about the climacteric period, or shortly afterwards. They are often mistaken for cardiac troubles, as they are attended in many instances by breathlessness and palpitation, bradycardia, and (less frequently) tachycardia. Such symptoms, along with slight increase in bulk, are misleading. It has been my fortune to see very many patients answering to this description, and to find that, by the employment of extremely small doses of thyroid extract, complete disappearance of all the disturbances was attained.

In youth, again, it is common to find lack of growth in both sexes. Occasionally we find children, and, still more, youths, stunted in growth, but excellent in form. One such will never, so long as memory lasts, leave the upper surface of my cerebral palimpsest. The son of one of my medical friends was, in his 18th year, 1 in. below 5 ft. in height. He had set his whole mind upon entering Woolwich, for which his one and only chance was just about six months ahead. The family turned to me in deep distress, as they felt that to obtain a growth of 4 in. in six months would be as great a feat as the addition of the proverbial cubit to the stature. By the employment of thyroid extract the youth grew 7 in. in six months, and, as he obtained one of the highest places in the entrance examination for Woolwich, it was obvious that his cerebral functions had been in nowise disturbed by the treatment. Several instances of the same sort—not, however, quite so dramatic—have been under my care; to be quite frank, it must, nevertheless, be confessed that, in some of these boys and girls, even thyroid treatment absolutely fails to produce the desired effect.

Another class of patient in whom we find thyroid extract invaluable consists in children and youths who manifest mild myxoedematous features—they are not for a moment, however, to be regarded as cretinoid. In many of these young people, along with satisfactory growth as regards height, there is rather too much corporeal bulk and rather too little cerebral energy. Under thyroid treatment they become more slender and the sluggishness of the intellectual processes entirely disappears. How these different conditions of hypothyroidism are brought about is often a complete mystery. The infections are in some cases responsible.

Ever since the observations of Oliver and Schäfer upon the suprarenal glands, their substance has been employed by me as the most important remedy in the treatment of

Graves's disease. Various mineral and vegetable substances have, in the past, been administered freely in this disease, and in more recent times the blood of dethyroidized goats has been largely used. This latter substance has in my hands, as in those of Murray, proved to be of about the same value as the *pulvis Olympicus* poured upon us by a racing car on a summer day. But in suprarenal extract we have an agent which may be stated fearlessly to have no rival in the management of this affection. Under its employment the rate of the pulse is reduced, the protrusion of the eyeballs disappears, the thyroid gland diminishes, the tremor, along with every other nervous symptom, vanishes, and the patient is restored to health in a way that we never see under any other method of treatment. No one who knows me will accuse me of aught but the most sympathetic attitude towards modern surgery; but this is one of the affections in which it is my duty solemnly to protest against the *furor operativus* which, in this condition, is in the overwhelming proportion of cases absolutely unjustifiable. It is surely far more scientific, as it is certainly much more successful, to trust to the chemical messenger, or hormone, which has the power of regulating the glandular activity responsible for so much of the clinical picture in Graves's disease, than to risk doubtful surgical adventures.

As to the treatment of acromegaly, we are still on the threshold of inquiry. In some early cases the use of pituitary substance has, in my own hands, been remarkably beneficial; even in later stages, although the effects have not been so striking, much relief has been obtained from a number of the subjective symptoms, while the general condition has been kept stationary. There are, however, many cases—and these are especially of the myxoedematous type already mentioned—in which the employment of thyroid substance furnishes the only means of amelioration. In those instances in which there are features suggestive of a concurrent Graves's disease, suprarenal substance (sometimes along with pituitary gland) is of real use. The action of the pituitary substance upon the blood vessels has, by the way, since the researches of Oliver and Schäfer, helped us enormously in the treatment of certain conditions where the arterial pressure has a tendency to fall. In many instances of pneumonia and other acute diseases, apt to be accompanied by fatal fall of arterial pressure, the hormone obtained from the posterior lobe of the pituitary gland is of the greatest use.

Did time permit, it would be a matter of the highest interest to point out that, during the menopause, many—sometimes all—of the troublesome symptoms then experienced may be removed, or at least relieved, by ovarian substance, while analogous effects are obtained during the corresponding period in men by didymin.

The new conceptions of Addison's disease have, as has been already shown, greatly widened our knowledge of suprarenal functions. We recognize that, as the result of many factors, the suprarenal bodies may be deficient in function. It is certain that pyrexia, from the most varied causes, can abrogate the functions of these glands and bring about even fatal diminution of arterial pressure. In many of these conditions, thanks to the labours of those who have been specially referred to, we now recognize that the use of suprarenal substance, or of adrenalin, will bring about recovery, through supplying the necessary hormone, until the glands are able to resume their functions. In a very large number of affections, therefore, it is absolutely necessary to have recourse to such modern methods of treatment.

Of an excess of suprarenal secretion, we at present know little or nothing; but a suspicion, first publicly voiced by Russell, that over-action of the suprarenal bodies may be responsible for certain cases of arterial degeneration must be referred to, and, as the treatment of such cases by means of thyroid substance—largely antagonistic to suprarenal secretion—has been followed by excellent results, the suggestion appears to be well founded. The experimental production of arterial degeneration in rabbits by adrenalin is a matter requiring further research.

We sometimes speak of pharmacological diagnosis, meaning thereby that, knowing certain diseases to be amenable to particular remedies, we believe that our provisional conclusions are correct if the affections yield to the methods. But the therapeutic touchstone is sometimes mis'eading, inasmuch as our remedies produce effects over a much wider area than we may be inclined to dream of. This in itself shows the uncertainty attending our pharmacological investigations. When we further consider that the agents we employ may act directly or indirectly, we are led to admit that we are only, after all, dealing with fragmentary knowledge or "broken lights."

We have to put to ourselves the important question, How do these powerful agents produce the changes we have traced? We have seen that they act upon many, perhaps all, tissues. Some probably act on the local processes of renewal and removal, and others by their effects on the muscular wall of the vessels; certain undoubtedly act on the tissues, not directly or even by modifying the vessels, but through the sympathetic system. It seems probable that they invoke nervous influences, consisting in waves of molecular disturbance, which bring about changes by liberation or inhibition. The recent work of Elliott, previously referred to, supports this view.

The results of these interesting advances must enhance our hopes of even more valuable additions to our knowledge, theoretical and practical, at a date not far distant. Their consideration opens a vista of infinite possibilities in the explanation of normal functions, the comprehension of morbid processes, and the management of diseased conditions. We are still groping after solid facts in the dusky twilight of the dawn, but we doubt not that the brighter radiance of the day will reveal much that is now hidden from our eyes. All that we can now know, all that we can now do, is the result of modern methods of investigation. Led by the whole trend of our education to set a high value on all honest work that explains the scientific problems and assists the practical treatment of disease, the results obtained by devotion to the three sister studies—physiology, pathology, and pharmacology—are to us of paramount importance. It is not given to us all in equal measure to contribute to the advance of knowledge; we, as clinicians, gladly avail ourselves of the labours of those devoted men who illuminate many vexed questions by their experimental researches.

We are like children on a beach of shifting sands; successive tides mould the form of the shore, gradually washing away, but as steadily building up, the coast of the future. So it is with ourselves; with the constant movement of thought, and the alternate advance and retreat of opinion, there are incessant changes. Contemplating these fluctuations, we are sometimes inclined to be impatient, and to wonder whether, after all, there is a real constructive movement.

But science, ever young, looks with the open eyes of Hope and Faith into the future; and those of us who can possess our souls in patience, trusting her methods, feel the assurance of greater conquests ere long. Recognizing that we live in an age of magnificent achievement, we shall be able, if there be any tendency to disappointment, to say:

> "Shall we not take the ebb, who had the flow?"

For some of us, the curfew of life will soon quiver upon the evening air. It is of the very essence of our being to experience a sense of unfulfilment; to feel that we have, at least in some degree, been unprofitable servants. But, if we have been faithful to our beliefs, and steadfast in our labours, we shall escape the bitter regret of wasted hours and unused opportunities, and we shall enjoy the satisfaction of knowing that, to the best of our powers, we have attempted to extend the knowledge, and increase the welfare, of mankind. Even if we may not witness, in our own time, the ends for which we have struggled, we shall have the consoling prospect that our successors will behold what we have longed to see. In the meantime, let us, in all our doings, walk along the path of safety, through accurate observation, and unprejudiced investigation, wielding fearlessly the spear of Ithuriel in defence of eternal truth.

IT is announced by the Museum of Pennsylvania University that Mr. Algot Lange, author of *In the Amazon Jungle* (Putnam), has been chosen to lead the South American expedition which is to spend three years investigating the Indian tribes of the Amazon region and making collections which, it is expected, will be the best of their kind. The expedition will start at the beginning of September.

Address in Surgery.

DELIVERED AT THE

EIGHTIETH ANNUAL MEETING OF THE BRITISH MEDICAL ASSOCIATION,

BY

F. T. PAUL, Ch.M., F.R.C.S.,

CONSULTING SURGEON, LIVERPOOL ROYAL INFIRMARY.

PERSONAL EXPERIENCES IN THE SURGERY OF THE LARGE BOWEL.

When the Committee of the British Medical Association did me the honour to invite me to give the Address in Surgery at this meeting in Liverpool, I at once decided that it would come more within the scope of my powers to ask your kind attention to a record of some of my actual experiences rather than to attempt a more general address. Owing to the immense impetus surgery has received since new fields were opened to us by the beneficent influence of the late Lord Lister's work there is but little ground in the whole range of practical surgery which has not been recently covered by men in the forefront of our profession; but each surgeon evolves personal plans and details in his endeavour to attain success, and it is by comparing notes amongst those with good experience that we may best hope to advance our knowledge and raise the standard of our results. After carefully thinking over the various branches of surgery in which it has been my lot to meet with fairly numerous cases, I came to the conclusion that I would offer you my experiences in the surgery of the large bowel. This would be too wide a subject for a single address if one proposed to travel over the whole range of surgical troubles in this region; but by limiting my remarks to those procedures in which some advance has been made during recent years, and of which I have had a fair personal experience, I hope to keep this address within reasonable limits. This will restrict me to the consideration of cases in which the following operations have been employed:

1. Colotomy.
2. Short-circuiting.
3. Colectomy.
4. Excision of the rectum.

Cancer of the Bowel.

These operations are needed to meet very different pathological conditions, though most of them ultimately present the clinical feature of obstruction. One alone, however, cancer, accounts for more than all the rest put together, and therefore the greater part of my remarks will be concerned with cases of malignant disease—a disease which in the alimentary canal usually first threatens life by mechanically interfering with its functions. We need therefore to consider each case from the two sides, mechanical and pathological, and often it is necessary to direct our treatment to the relief of the mechanical obstruction before we can attempt a cure for the malignant growth. But whether we design to give relief only or to try and obtain a permanent cure, the selection of a particular operation is not merely a matter of clinical experience. The underlying malignancy and the pathological problems involved by it must not be lost sight of, and especially must we take into consideration the varying degrees in malignancy exhibited by cancerous growths in the bowel. On this rests the expectation of life in most of our patients when proper steps are taken to avoid a fatal issue by stenosis. We trust to our surgical instinct, combined with careful clinical investigation into the patient's constitutional condition, to guide us as to his fitness to bear an operation of a certain magnitude, but we must rely entirely on information obtained from pathological sources in estimating the real value of the operation and frequently in deciding its limits. Of what use is it to submit a patient to a long and dangerous operation if his prospect of life on recovering from it is little better than he would have obtained by a simple colotomy? Or, again, why undertake an extensive excision of mesentery for the removal of glands which in all probability are not infected?

It is therefore of paramount importance that surgeons should familiarize themselves with the characters of the different kinds of cancer met with in various parts of the body, as so much depends upon the behaviour to be expected from each kind. This is especially true of intestinal cancer. In no other part of the body is there a greater variation in the degree of malignancy than in the bowel.

Spontaneous Cure of Cancer.

In the first place, I am quite convinced that cancer of the bowel may undergo spontaneous cure. It is much more easy to make a statement like this than to prove it, and I doubt if I can offer any really convincing proof. The following are the grounds on which the assertion rests:

1. For over thirty years I have been removing these growths and submitting them to personal microscopic investigation. I am therefore very familiar with their nature and appearance.
2. Many cases having the minute structure of cancer have not recurred, though known to have been removed with an insufficient margin of safety.
3. Malignant disease of the bowel is very rarely removed during the early stage, yet the percentage of cures is remarkably good.
4. The duration of life after colotomy for inoperable cancer of the bowel is often prolonged compared with that in other inoperable cancer cases, whilst a proportion of the cases seen, handled, and passed as malignant get well and the tumour disappears.

Last year I had five cases under observation at the same time, in all of which I had done a laparotomy during the previous seven years and given the opinion that the patients had inoperable cancer—one of the caecum, four of the iliac and pelvic colon. Yet all appeared to have recovered.

In bowel cancer the relative malignancy appears to depend more upon the seed than the soil. Equally good results may be obtained in young and well-nourished subjects as in older people; but fairly constant conditions are found to be associated with each different variety of growth. There are three chief kinds of carcinoma, and a few of sarcoma—the latter being rare, and always of malignant type.

Varieties of Cancer of the Bowel.

The three varieties of carcinoma are:

1. The large soft fungating "encephaloid" type.
2. The small hard "scirrhous" type.
3. The infiltrating "colloid" type.

All may be said to be primarily columnar-celled growths originating in the intestinal glands, and all ulcerate; but they follow different paths of evolution, and attain different degrees of malignancy which it is important to recognize.

The scirrhous variety is always unmistakable. It produces the hard ring stricture of the bowel, and is more common than colloid cancer, but much less frequent than the soft fungating type. This latter may usually be as easily distinguished from the colloid form of growth by the following characters: It is softer to the touch. There is a good deal of fungating growth within the bowel, but generally not much solid infiltration of the bowel wall. There are usually numerous large soft glands in the neighbouring mesentery, which are septic and not malignant. In colloid cancer, on the other hand, there is a hard-edged ulcer with no fungation. There is dense hard infiltration of the bowel wall, often attaining a thickness of from one to two inches, and giving it a solid feel. The glands, if infected, are not soft, but hard and glistening.

Misconceptions Regarding Cancer.

Misconceptions exist regarding the nature of these different tumours. In the first place, some seem to forget that "scirrhous" and "encephaloid" are merely terms of clinical or macroscopic significance, convenient when properly used, but otherwise very misleading. Almost any histological variety of cancer may take on either character without change of cell type. Even in the breast scirrhus does not imply acinous growth, as either round-celled acinous cancer or columnar-celled duct cancer may present this clinical feature. Some speak and write as

though the term "scirrhous" was equivalent to mammary cancer, and consequently that a scirrhous type of cancer in the bowel means a cancer histologically resembling breast cancer. Whereas no form of bowel cancer could be identical with a breast growth, any more than bowel and mammary tissue could be identical. They may and do present similar clinical characteristics, and a hard ring stricture of the colon resembles a breast scirrhus, or a thyroid scirrhus, or any other scirrhus in its hardness, in its tendency to cell degeneration, to slow but inveterate growth, to lymphatic infection, and difficulty in complete eradication; but histologically its affinity is to columnar-celled mucus-secreting epithelium, and not to the specific gland tissue of the breast.

The really important misconception, however, concerns the relative malignancy of the three varieties of cancer. Usually the big, fungating, encephaloid type of growth is regarded as the most malignant; the colloid as being intermediate, and the scirrhous, or ring stricture, as the most benign. This arrangement is entirely wrong and out of accord with clinical experience. The colloid is the most malignant type, the ring stricture comes next, and the fungating type is the best, it being one of the least malignant kinds of cancer met with in the body.

Fig. 1.

It is a clinical fact of considerable importance, to which I have often referred at our local medical society, that the up-growing forms of cancer are essentially less malignant than the down-growing, ulcerating, and shrinking types. Take as examples fungating epithelioma of a warty or cauliflower character on the tongue, larynx, or skin, and compare with much smaller but more infiltrating and ulcerating growths in the same positions. Surely our operation results have always been better, far better, in the former than the latter. Again, in breast cases, take the case of a soft encephaloid looking duct cancer, and compare with a small infiltrating, shrinking scirrhus. The

Fig. 2.

duct cancer, notwithstanding its malignant appearance, will often yield an operation cure, whilst the little simple looking scirrhus turns up again in skin, glands, or internal organs. The duct cancer belongs to the up-growing papillomatous class, whilst the scirrhus infiltrates, degenerates, and ulcerates. Papillomatous and villous growths are on the borderline between innocence and malignancy. On the skin they are for the most part quite innocent. In the mouth or larynx we regard them with more suspicion. In the bladder they show a still worse tendency, and in the bowel I doubt if they can be called innocent at all. The familiar rectal polypus is adenomatous or glandular, rather than warty; but there are true papillomata apart from the polypi, and it is these which should always be regarded with grave suspicion.

Histology of Bowel Cancer.

The large, soft, columnar-celled cancer of the bowel apparently usually begins as a down-growth from the Lieberkühn's follicles, or, rather, we assume that it does, since it shows that appearance at the growing margin of an old malignant ulcer, which may be quite a different matter. But it is certain that in some cases the first growth is an up-growth of papillomatous type, and occasionally this up-growth attains considerable dimensions before any truly malignant down-growth occurs. The latter always presents cells of a cancerous type from the first, but the former have an innocent appearance, and at most could only be regarded as precancerous. Fig. 1 shows the ordinary microscopical picture of columnar-celled cancer of the bowel, whilst Fig. 2 is photographed from a section of a large soft rectal growth, which was mainly villous in type; but it had already taken on infiltrating characters, and though removed it recurred and was fatal. An earlier operation would undoubtedly have been quite successful.

The soft columnar-celled growths attain a higher degree of evolution than the scirrhous or colloid kinds. The cells are long, regularly arranged, and evidently functional. Owing no doubt to the high development attained by them, this form of cancer degenerates slowly, and so produces a bulky growth, and at the same time one which shows but little tendency to disseminate. In the colon it is rather the exception than the rule to meet with infected glands, though they are constantly enlarged from septic absorption. In the rectum gland infection is more frequent, though the characters of the primary growth have little to distinguish them from similar tumours in the colon. The fungating form of cancer is not only the

Fig. 3.

least malignant, but, fortunately, also the most common variety met with in the bowel.

We have no knowledge of either the colloid or scirrhous growths in villous form, and it may be safely assumed that they always originate as down-growths from the intestinal glands. In colloid cancer the columnar character of the cells is quickly lost, and the highly infiltrating nature of the growth is evident. The older parts undergo a complete colloid change, rendering the appearance almost structureless; but at the growing margin and in all the neighbouring lymph spaces large free cells are seen, rounded in outline, and filled with the characteristic

colloid substance. The lymphatic infection rapidly spreads to both vessels and glands, producing glistening networks and masses of colloid tissue. The peritoneum is also frequently invaded. A very wide distribution of colloid cancer may take place through the lymphatic system, even in distant organs, but I have never seen it carried by the blood vessels. The infiltrating nature of this type of growth is well shown in any section through the muscular coats of the bowel in the neighbourhood of a colloid ulcer (Fig. 3).

The scirrhous variety bears a closer resemblance to the ordinary type of bowel cancer. The stroma is more abundant and more fibrous. The cells are smaller. They frequently retain the columnar type, but are much less pronounced, and not rarely assume characters difficult to distinguish from spheroidal-celled growths. The cells degenerate before attaining the degree of glandular evolution characterizing the soft growths, thus explaining the small bulk of tumour growth in a ring stricture. But they possess marked infiltrating qualities, penetrating all the coats of the bowel, and dotting the peritoneum with shotty nodules. The lymph glands gradually become infected, and not rarely distant organs like the liver also. Ring strictures are not rapidly malignant; but they possess a slow and sure grip, and unfortunately recurrence is more the rule than the exception after excision.

Histologically, most ring strictures present a columnar-celled structure; but some, as in Fig. 4, almost at once

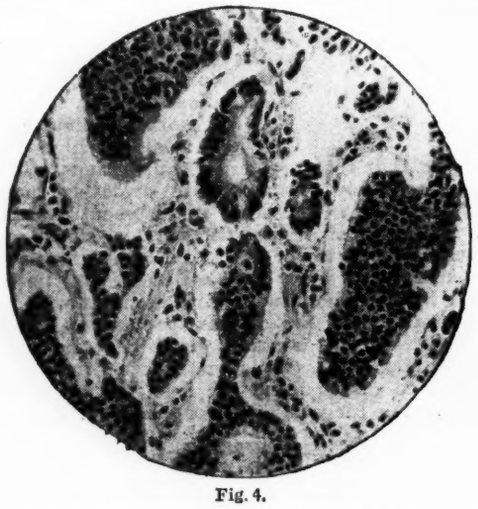

Fig. 4.

take on round-celled characters. In this specimen, though the general appearance is round-celled, the cells at the margin of the growth are seen to be directly replacing those of the glands of the mucous membrane, and in many deeper parts they show a tendency to form imperfect gland tubes again.

The most common sites for the fungating type of growth are the rectum and caecum, though it often occurs in the sigmoid, and occasionally at any other part of the large bowel. Colloid cancer chiefly selects the rectum, and ring stricture the sigmoid, though neither are limited to these regions.

Epithelioma of the Rectum.

A short reference must be made to the presence of squamous-celled epithelioma in the rectum. This form of growth is often supposed only to occur at the anal margin or on the skin surface; but I have met with five or six cases in which it has originated in the rectum about two inches above the anus. All have occurred in women, and when seen early enough for the point to be decided, the growth has commenced on the anterior aspect of the bowel, but not in the vagina. In such cases the tumour no doubt originates in an embryonic rest of squamous-celled epithelium in the mucous membrane of the lower gut. Epithelioma in this position follows the usual course, showing the same tendency to gland infection and local recurrence that it does in other parts of the body. Histologically, the individual cells are smaller and the "nest cells" less pronounced than in skin growths (see Fig. 5). Quite a contrast to the true anal epithelioma, in which the cells are large and horny.

Sarcoma of the Bowel.

Sarcoma of the large bowel in my practice has been very rare. Some years ago I had a case of small round-celled sarcoma of the rectum in a woman, aged 50, at the Royal Infirmary. It formed a spindle-shaped tumour of the middle third, stricturing the bowel without ulceration, and was recognizable as a sarcoma before microscopical examination. It was excised, but recurred, and the recurrence was fatal within a year. Recently, in private practice, I met with one of those rare examples of melanotic sarcoma of the rectum. It formed a smooth fungating tumour low down on the posterior wall in a male, aged 70. He was not a suitable subject for a radical operation, and did not live long, for the growth proved to be very malignant, and was rapidly and widely disseminated.

I do not refer to one or two cases of congenital malignant growth that I have seen in connexion with the rectum, as they have no bearing on the matter in hand.

Influence of Pathology on Surgery.

If a surgeon when operating takes the foregoing pathological details into consideration they will often influence him considerably in his decision as to the nature and extent of the operation. Thus, if the growth be of the fungating type, recognized by its softness, bulk, situation, character of gland infection, etc., he would on the one hand feel justified in removing the tumour without necessarily interfering with any tissue much beyond the visibly

Fig. 5.

affected area; or, on the other hand, if the risk to life seemed too great to allow of this being done, he would be encouraged to hope for a reasonably long period of relief by short-circuiting or colotomy. If the tumour prove to be massive and solid, and especially if there be evident glistening gland or peritoneal infection, or if the growth be in the rectum and can be felt as an abrupt hard-edged ulcer without fungation, then the case is one of colloid cancer, and the outlook would be recognized as discouraging. When a wide and thorough removal appeared warranted it might be undertaken; but as the prospect is never good in colloid cancer, either for excision or temporary measures, less risks to life should be accepted. In the case of ring strictures, always easily recognizable, the indication is to excise more widely than one used to think necessary, and to remember that it is in this type of growth we have the best reasons for following up the path of lymphatic infection.

These rules for my guidance have come to me gradually as the result of practical experience. The first case in which my eyes were opened to the true nature of the large, soft glands so frequently seen in association with fungating cancer of the bowel occurred about twelve years ago. I had removed the caecum for a growth of this type from a gentleman aged 37, and knowing that I had left several enlarged glands behind gave a bad prognosis. A year later he was so well that I was persuaded to try and complete the cure by removing anything that might have grown since. On reopening the abdomen, all the glands were found to have disappeared. The patient is still living and free from recurrence. This case occurred before those

included in the table. Of course a systematic examination of the glands would have at once afforded the information required, and when one recalls that this is barely twelve years ago, one is struck with the changes and facilities which have come about since. There were no Clinical Research Associations then, and I had to cut all my own sections because I could not get them done to my satisfaction elsewhere. It too frequently happened that though I would cut a section of the primary growth to determine its nature, I would judge the glands on their naked-eye features. After this Dr. Ernest Glynn, now our professor in pathology, undertook to investigate this type of gland for me. He soon showed that however large they might be, the increase in size was very rarely due to secondary growth, but was owing to microbic infection derived from the foul ulcer. In the ring stricture exactly the reverse holds good; microbic infection is slight and unnoticeable, but cancerous deposits are frequent, even though the glands may be very small. In colloid cancer as met in the bowel the glands seem to be almost constantly infected with the growth.

Clinical Features.

Having dealt with the influence of pathology in guiding us as to the nature and extent of an operation undertaken for the cure or relief of malignant disease of the bowel, I must next say a few words regarding the clinical details which bear upon the same point.

The first great line of demarcation in the clinical arrangement of these cases is the presence or absence of complete obstruction at the time they come under a surgeon's observation. In all my earlier experiences, say from 1878 to 1890 or later, complete obstruction with faecal vomiting and meteorism were regarded as necessary preliminaries to an application for surgical aid, and one soon found that any attempt to relieve the obstruction which did not provide for an immediate external escape of the locked-up contents of the bowel was doomed to failure. So constantly fatal were all operations for intestinal obstruction in those days through delay, that one thought very little of the objections to an artificial anus. It was a great event to save life at any cost. Nor should any such feeling of objection encourage us now to risk life for the sake of at once accomplishing a neat and clean surgical procedure. Even short-circuiting seems often to fail when colotomy is at once successful, and I feel sure that whenever there is complete obstruction in the colon a preliminary colotomy is by far the safest course in all those cases in which any form of internal strangulation can be excluded. The one class of case in which I should always wish to make an exception whenever possible is when the obstruction is actually at the ileo-caecal valve, and it is necessary to open the small bowel. There are such decided objections to a faecal fistula connected with the small intestine, and usually such favourable prospects for short-circuiting in this situation, that the additional immediate risk may be accepted unless paresis and collapse have already supervened, when an artificial anus is imperative.

Recognition of Cancer of the Bowel.

Unfortunately we are still without means for recognizing cancer of the bowel in its really early stages. In fact, it sets up no symptoms at this period of its growth which would lead a patient to consult his doctor, except when low down in the rectum. Here it excites irritability, and attracts attention by the presence of blood and mucus, and so often allows an early diagnosis; but higher up we have almost invariably to wait until the growth has begun to impede the passage of faeces before the patient is sufficiently alarmed to seek advice. Large ulcers without marked obstruction are chiefly characterized by intestinal toxaemia, with elevation of temperature, flatulent dyspepsia, loss of flesh, irregular colic with constipation or diarrhoea and mucus and blood in the motions—visible when the growth is low down, occult when higher up. A tumour may frequently be felt. The ring stricture usually causes less disturbance to the general health, but more colic and more obstruction.

An *x*-ray screen view of the behaviour of a bismuth meal is useful if its limitations are recognized. It may inform us as to the site and the amount of constriction, though in regard to the latter atony or tonicity of the bowel must be taken into consideration. In no circumstances can it indicate either the extent or the malignancy of the growth, nor can the ready passage of a bismuth meal be regarded as a contraindication to operation. If the disease is within the reach of the sigmoidoscope this instrument may be of considerable assistance in the diagnosis of growths situated in the pelvic colon, where they frequently escape touch when examined either by the rectum or the abdomen.

When complete obstruction occurs, the disease is most frequently situated in the pelvic or iliac colon, but tight strictures are possible in all parts of the large bowel, even in the caecum. The sudden onset of the final attack of obstruction is not due to any increase in the stricture, but to blockage by some indigestible substance which has been swallowed, and it is remarkable how many patients deny previous symptoms of chronic obstruction. I think that some colic and irregularity must always precede a constriction that can be plugged by an orange pip, but it is not always observed, and I have several times operated upon patients, particularly of the hospital class, who have denied all but the slightest symptoms, though I have found marked hypertrophy of the bowel above the stricture. Much depends upon the natural habit of bowels. Those with a tonic habit get diarrhoea as a result of incomplete obstruction, whilst the atonic type suffer from increased constipation, which they accept as a variation of their normal condition. In the former the site of the stricture is usually readily discovered, as peristalsis is so easily set up in the irritable hypertrophied bowel, and can be traced up to the growth.

Complete obstruction in the lower regions of the alimentary canal is soon accompanied by meteorism. When this occurs, the parts most easy to recognize are the rounded mass of the caecum, the rope-like coils of small bowel, and sometimes the enormous distension of a twisted sigmoid. If the site of an obstruction is not rendered apparent by other means, the behaviour of an enema may give useful information. When it is in the sigmoid region the bowel is irritable, and rarely tolerates more than half a pint, which is rapidly returned. When higher up much more may be injected and retained.

Colotomy for Obstruction.

If the patient when seen is completely obstructed, the abdomen distended, and the general condition bad, it is clear that the simplest form of relief is the most likely to be successful. In such a case abdominal exploration is easily fatal, and a colotomy may be just as easily successful. I have very rarely gone wrong in doing a colotomy under such circumstances. The most serious failure was in not recognizing a twist of the sigmoid in a case which occurred several years ago. I have now had five of these cases. This man, and a boy of 11, died without relief. In the other three—one man and two women—I excised the bowel, and they all recovered. Cases of volvulus of the sigmoid usually give an old history of very difficult constipation, with attacks of partial or complete obstruction, from which they have spontaneously recovered. The final attack is sudden in its onset, accompanied by severe pain, rapid distension, often attaining unusual dimensions, and if not soon relieved dangerous symptoms supervene, due to gangrene of the bowel. The higher up and the more extensive the twist the more rapid and marked the collapse. Age, condition, and history will often distinguish the case from one of malignant stricture; but whenever there remains doubt as to the possibility of internal strangulation being mistaken for cancer exploration is, of course, essential. But in all cases of complete obstruction of the large bowel, whether diagnosed by exploration or otherwise, and in which strangulation is absent, I advise treatment by colotomy in the first instance, in preference to an internal operation. It is immensely less dangerous, and it distinctly lessens the risks of the latter when undertaken after a suitable interval. The only drawback to a colotomy under such circumstances is the increased time occupied before the whole proceeding can be completed, and the necessity for two, or perhaps three, operations in place of one; but since the one would very often be fatal, and the two or three very rarely so, our patients would infinitely prefer the latter course if they understood the whole circumstance.

Having decided upon a colotomy, where should the bowel be opened? I used to say the lower the opening the better, and for a permanent operation this is generally true. But we are discussing a temporary proceeding. The patient is distended, very ill, perhaps old. Probably we do not know exactly where the stricture is except that it is below the caecum, and anyway, we hope that later on we shall be able to open a flat abdomen and comparatively easily remove the obstruction. Always, then, I think, we should decide on a right lumbar operation. It is safe, satisfactory, and out of the way of the future abdominal section. I have now carried out this procedure on many occasions in private as well as hospital practice, and the more experience I have of it the more favourably it appeals to me.

The Operation of Colotomy.

Colotomy was a popular operation when I joined the ranks of surgery. This was before Reeves revived Littré's iliac operation, so that which was done was always Amussat's left or right transverse lumbar operation. Very rarely indeed a Littré might be attempted in cases of imperforate anus. When it was, it was almost always fatal. In 1882, four years after I became a hospital surgeon, Mr. H. A. Reeves, of the London Hospital, advocated a return to the original iliac operation for adults. His view gained support, and after Mr. Harrison Cripps's carefully planned operation was published in 1889, lumbar colotomy rapidly lost favour, and soon apparently passed almost entirely out of notice. In 1890 I recommended the use of the glass intestinal drainage tube as an adjunct to iliac colotomy, and for many years used it in this connexion. Fifteen years ago about 85 per cent. of my colotomies were anterior; but since then I have made more and more use of the lumbar operation, particularly on the right side.

Of all the possible sites which may be selected for opening the colon there are only two of any great practical value, left iliac and right lumbar. The left lumbar operation has its uses, though they are not great, and transverse colotomy may occasionally be desirable. Caecostomy is always an abomination. It is bad from every point of view, except that sometimes it may be said to be absolutely necessary. There is nothing to be said specially against transverse colotomy, but the right lumbar operation gives equal relief, and does not complicate a subsequent abdominal section. Whenever a colotomy is expected to be permanent, and the seat of the obstruction permits, the left iliac operation should be selected. This operation is *per se* free from danger, and yields the best results obtainable. When the patient is very old and exhausted, and in the late stages of obstruction, a lumbar operation, in my judgement, when done with a small incision, is less dangerous than an anterior operation. If such a patient dies, death usually results, not from the operation, but from the continued collapse consequent upon obstruction; but when the operation itself is fatal, death occurs about five days later, owing to failure of the union between the bowel and the parietes. Such failure does not seriously affect an extraperitoneal operation, and hence the lumbar operation has this added safety in old and exhausted subjects. This is almost the only advantage in retaining the left lumbar colotomy. Transverse colotomy, as just stated, is practically unnecessary and very rarely desirable. Right lumbar colotomy, on the other hand, has a wide field for useful application as a means for affording temporary relief in cases of complete obstruction of the colon below the caecum, and as a valuable method of treating certain cases of inflammation and ulceration of the colon.

As regards the technique of these operations, the simpler they are made the better. As in gastro-enterostomy our plates, buttons, and bobbins served to teach us how to do a plain suturing operation properly, so in colotomy one knows now that all we need is to plan and suture well, and the result will be the best. For the past five years or more I have used no mechanical appliance for iliac colotomy. A small oblique incision, from 1½ in. to 2 in. long, is made outside the rectus muscle over the iliac colon. Through this the bowel is picked up and passed along until the highest part available is reached. A small loop is then drawn out of the wound, grasped with Kocher's forceps, and held in position by an assistant whilst the surgeon fixes it with a continuous Lembert suture of fine green sulpho-chromic gut to the parietal peritoneum and deep aponeurosis (Fig. 6). Having done this, the convexity of the loop is cut off with scissors little by little, suturing the bowel as it is cut to the skin with a haemostatic

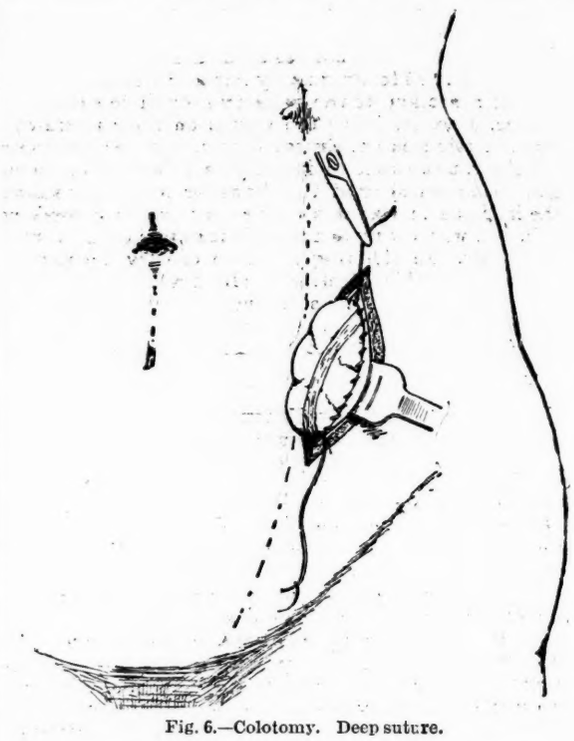

Fig. 6.—Colotomy. Deep suture.

buttonhole stitch, still using the green gut (Fig. 7). In this way the wound is contracted so as to provide an opening not exceeding 1 in. to 1¼ in. Too much of the convexity of the bowel should not be cut away. A complete spur with a double-barrelled opening is not desirable.

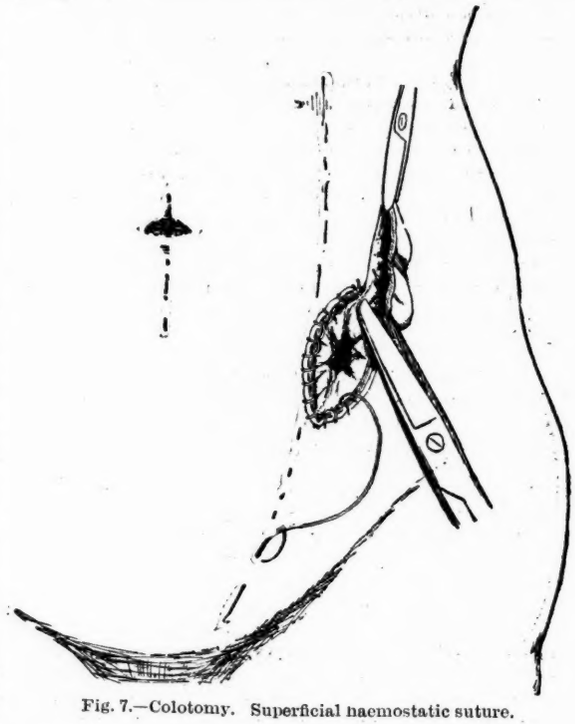

Fig. 7.—Colotomy. Superficial haemostatic suture.

This gives a moist, patulous orifice, with a liability to prolapse, one in which faecal discharges are difficult to control. There should be only one orifice, large enough to comfortably admit a finger, and with a tendency to contract rather than to evert if the patient is to experience comfort with it. Such an artificial anus is incompatible

with a complete spur at first; but as time goes on the spur improves naturally by the wasting of the distal part, and in time becomes perfect.

For many years I have recommended a simple mush-room-shaped aluminium plug to be used in conjunction with iliac colotomy (Fig. 8). It is retained in position by

Fig. 8.

a pad of wool and a detached belt. This still appears to me to be the most efficient form of support and the most useful help towards control, and my patients always use it.

Right lumbar colotomy is now shorn of its terrors by greater familiarity with abdominal operations. When the colon is distended it is easily found on either side. When not distended the peritoneal cavity may, if necessary, be opened for exploration and closed again with but slight detriment to the patient. I always suture the bowel to the skin, as in iliac colotomy, and very rarely attempt to make a spur, since the lumbar operation is almost invariably a temporary measure to be done away with as soon as it safely can be.

The disability resulting from an iliac colotomy is not nearly so great as is so often assumed. If it were, the operation would be robbed of three-fourths of its value. When a satisfactory surgical result has been obtained it only needs a little pluck and a desire to make the best of a disadvantage for any ordinary patient to continue to lead a useful life. I have known a doctor to continue the full work of a general practitioner for years, a ship steward to follow his avocation on a big Cunarder, and a lady with this disability for life to continue to make a charming hostess, and to be the brightest member of her family. With these and many similar examples within my experience I cannot sympathize with the weak-spirited individual who sinks under the misfortune of such a personal discomfort.

As I have already said, the operation of colotomy is practically free from danger, though the conditions for which it has to be undertaken often seriously threaten life, and occasion some *post hoc* fatalities. The only deaths I have met with for some years have been due to obstruction, and not to operation. In some of these fatal cases, I think, perforation, which is not very rare in the late stages of malignant stricture, may have been present. Especially in the old and feeble the paresis, meteorism, and vomiting, really due to perforation, are sometimes accredited to obstruction, and a futile colotomy undertaken. There ought to be no mortality from colotomy in the case of patients in a general condition of health suitable for the operation, and under 65 years of age.

Results of Colotomy.

I have gathered together in a small table such results as appear to me to be interesting and important in those of my cases of colotomy which have been done during the last ten years in private practice. I should have preferred to include the much larger number of hospital patients undertaken during the same years, about three to one, but found it impossible to follow them up satisfactorily. These fairly reflect my experience, and I consider that a small group of cases in which the subsequent history of all is known is far more reliable than a large group in which there must of necessity be many gaps.

As the table shows, I have done colotomy upon 68 patients in private practice during the past ten years. In 44 of these there was no obstruction, or it was chronic in type, and all recovered. In 24 acute obstruction was present, and 9 deaths occurred. These were mostly in old people with vomiting (often faecal), meteorism, and collapse. It is interesting to note that 18 of the cases of complete obstruction were met with during the first period of five years, and accounted for 7 of the 9 deaths; whilst in the remaining period there were only 6 cases with 2 deaths, showing that practitioners are recognizing the importance of earlier surgical treatment. Other points of interest in the table are that right lumbar colotomy accounts for one-fourth of the total number, that cancer of the rectum was the primary trouble in half the cases, and that my statement as to the long duration of life after colotomy for cancer is borne out.

Colotomy.

All cases operated on in private practice, 1901 to 1911—68 cases; 37 males, 31 females.

Mortality.—Acute obstruction, 24 cases, 9 deaths; without obstruction, 44 cases, no deaths.

1901-6: 33 cases; 18 obstruction, 7 deaths.

1907-11: 35 cases; 6 obstruction, 2 deaths.

Operation.—Iliac 48, right lumbar 17, transverse 2, caecostomy 1.

Disease.—Cancer of rectum 34, sigmoid 15, colon 4, prostate 1, uterus 1, inflammatory 4, cause unknown (chiefly malignant) 9.

Age of Cancer Cases.—Under 30, 1; 30-40, 4; 40-50, 8; 50-60, 23; 60-70, 20; 70-80, 8.

Life after Operation.—Non-malignant, 4; all living, 5, 6, 8, and 10 years. Malignant, 64; 10 living at 8 months, 16 months, 1½, 2¼, 2½, 3½, 4¼, 7¼, 10, 10 years. Malignant, since dead, 54: early, from obstruction, 9; from other causes, 3; recurrence under 1 year, 25; recurrence under 2 years, 8; recurrence under 3 years, 6; recurrence under 4 years, 2; recurrence under 10 years, 1.

Internal Operations.

I now propose to speak of the methods I use for dealing with the disease after the obstruction has been relieved for a sufficient time to enable the patient to bear the more serious internal operation. In a month such a case will usually be in good condition for this, and much on a par with one in whom the exploration is undertaken before obstruction has supervened. When explored the great majority of the cases prove to be cancer, a few are tuberculous disease, a few fibrous stricture, some from acute but more from chronic ulceration. The malignant growths are excised if possible, otherwise short-circuiting is the only available improvement upon colotomy. Tuberculous disease of the caecum may be excised, but the results are not satisfactory. I have only done it in hospital practice, and not at all recently. For tuberculous ulceration lower down in the colon and rectum when severe the best surgical treatment is colotomy. Fibrous strictures vary much in their extent and position, and excision, short-circuiting, or colotomy may be employed in accordance with the special conditions present in each case.

Short-Circuiting.

Short-circuiting for obstructions in the colon is a valuable operation, but as I have not yet carried out Mr. Arbuthnot Lane's views regarding the treatment for intestinal stasis, and as I always excise growths whenever possible, I probably do a smaller proportion of short-circuiting operations than many other surgeons. The technique employed is the same as for gastro-enterostomy—namely, clamps, an external suture of green catgut, and an internal haemostatic suture of the same. The apposition is usually lateral, and when the obstruction is at the ileo-caecal valve the ileum between the new orifice and the valve is puckered by a purse-string suture to direct the contents of the bowel through the new opening. In regard to this operation there are two points upon which it seems to me that emphasis ought to be laid. One is that in cases of obstruction in which paresis of the bowel is present short-circuiting may fail to relieve, while an external faecal fistula will be successful. In practice I have failed with the former, and a day later done the latter with a satisfactory result. I therefore do not recommend short-circuiting operations in the presence of any severe form of obstruction such as is likely to be fatal without immediate relief. The other point is that in my practice I have had the best success when I have cut out of circuit the smallest possible amount of bowel. I therefore usually

short-circuit just round the growth or other obstruction. In non-malignant cases the bowel appears to be quite normal afterwards, and in malignant cases the patients often enjoy a considerable period of comparative comfort.

Short-circuiting is a more pleasant operation for the patient than colotomy, and for this reason may replace it whenever it is feasible to do so; but the latter will always be necessary for inoperable rectal cancer, for dangerous obstruction, and for colitis, and some other ulcerative affections of the colon; so that the former really only comes under consideration in a small proportion of the whole number of cases. During the last ten years I have only short-circuited in twelve of my private patients, and the results are given in the table:

Short-Circuiting.

All cases operated on in private practice, 1901 to 1911—12 cases; 7 males, 5 females.
Mortality.—No deaths.
Operation.—Ileum to colon 8, colon to colon 4.
Disease.—Cancer 7, inflammatory 5.
Age.—2½ to 76 years.

Colectomy.

However good the results of short-circuiting or colotomy may be, we must always wish to excise a malignant tumour of the bowel whenever circumstances permit, and I propose now to deal with the operations planned for the removal of such growths, taking first those situated in the colon, and then those in the rectum.

The caecum and the sigmoid are the most favourable, and fortunately the most frequent, situations for malignant tumours of the colon. The caecal operation is certainly the more extensive of the two, and I used to prefer the sigmoid site, but on the whole I think the caecal cases have done the best, chiefly in the way of the cure being more permanent. A rather liberal interpretation may be placed upon the definition of an operable tumour. The structures about which we are anxions are the ureter and the iliac vessels; the glandular infection; attachment to the parietes and other portions of bowel; and secondary distribution in more distant parts. The ureter is very rarely actually involved, though it may appear that it would be likely to be. The same holds good with the iliac vessels. Attachment to parietal peritoneum, or to portions of small bowel, do not necessarily render the case either inoperable or incurable. Infection of glands has to be considered in the light of the observations made on that subject in the earlier part of this paper. Distant secondary infection, of course, negatives radical operation. Increasing experience has encouraged me to undertake the major operation in more cases of cancer of the colon, and in less cases of cancer of the rectum.

I did my first colectomy by the glass tube method just twenty years ago. At the time of publishing it [1] I narrated six other cases to show how this method had been led up to by previous unfavourable experiences with primary suture and buttons, which proved to be accompanied by a heavy mortality. Since 1892 I have adhered to the same technique, and with very good success. Only at one period, when I imagined I had become clever enough to obtain primary union, did I abandon the tubes and go back to suture. I did one case in this way at the Infirmary and one in private practice. Both died, the latter being the only fatal case in the table, and the former sharing this unenviable distinction with only one other patient. No doubt the time will come when a better method than bringing out the ends of the bowel and draining them by means of glass tubes will be invented; but I doubt if I shall ever again excise tumours of the colon in any other way, as I know this can be undertaken with a very low mortality. The operation is not a pleasant one for the patient, and the cure is delayed, but the final result is good, and after all, that is what should appeal most to us and to our patients.

Author's Operation.

Very shortly I will describe the original operation again. In most cases the tumour will have been located before it is undertaken. If not, a preliminary incision in the middle line below the umbilicus will be necessary, and usually this will not be suitable for the removal of the growth. One needs an incision about 6 in. long, conveniently placed over the position of the bowel to be excised. Having made this, and packed off the neighbouring viscera, the bowel is loosened from its attachment to the neighbouring parietes by an incision in the parietal peritoneum, especially in the caecal and sigmoid regions. By means of an aneurysm needle the mesenteric vessels are then ligatured on the proximal side as far as the character of the glands or size of the tumour indicate to be necessary, and they are clamped with compression forceps on the distal or bowel side. Upon cutting through the mesentery between the ligatures and the forceps, the fold of bowel, usually about a foot in length, is completely loosened, and now hangs out of the abdomen. The cut in the mesentery is sutured with catgut, and the two portions of bowel for about 4 in. beyond where they are to be cut across are also lightly sutured to each other, so that they lie together like the barrels of a gun. (Fig. 9.) This arrangement is carried out in order to render the subsequent clamping of the spur safe from risk of perforation. Next, two intestinal glass drainage tubes are ligatured into the bowel, one above and the other below the growth, and the affected part is cut away. The exposed mucous membrane round the tubes is cleansed and dried. The abdominal wound is sutured, and the ends of the silk ligatures round the tubes are passed through the skin to fix the

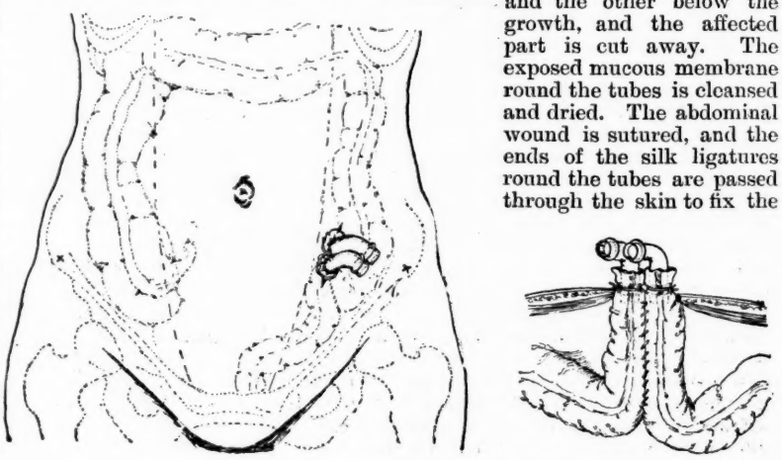

Fig. 9.—Colectomy. Author's operation. May, 1892.

latter securely. (Fig. 9.) Then the stumps of bowel are covered with xeroform powder, the distal tube is plugged with wool, and a thin rubber tube is attached to the proximal to carry off faecal matter. Done in this manner the operation is almost bloodless, and the shock inappreciable.

The tubes remain in for from five to ten days, and the wound takes from three to four weeks to clean up. Then a strong clamp of Dupuytren type is introduced and the long spur is clamped. This requires two days and the healing of the clamped edges will occupy a couple of weeks. Finally, the mucous membrane is separated from the skin, without opening the peritoneal cavity, and sutured with catgut; whilst the skin is brought together with deep mattress sutures of silver wire, which must be retained for some time as leakage with secondary union is perhaps more frequent than primary union. Silver wire is much to be preferred to any other substance for the deep skin sutures.

I have had the operation completed in the Infirmary in a month, but it is a mistake to rush the various stages, and I now always tell my patients it will take quite two months to complete the operation, and that it will be three months before they can expect to be fit for work again.

Mr. Arthur Edmunds, of the Great Northern Central Hospital, suggested an improvement in the technique of this operation as applied to children with intussusception, and my colleague Mr. Woolfenden tells me he has employed it with success. This encouraged me to make a trial of Mr. Edmunds's method in an adult when removing a malignant growth in the pelvic colon involving also a coil of small bowel. The plan is to clamp the bowel in conjunction with the use of the tubes at the first operation. For this purpose the tubes are made of metal and grooved to accommodate the blades of a spring clamp

which cuts through the spur during the first few days. When the tubes are removed the clamp comes away with them, and already there is a way for the faeces to pass along the alimentary canal. To judge from the one case in which I have tried it, I should say this method adds a little to the shock and subsequent toxaemia due to absorption from sloughing tissue, hence I am not prepared to recommend it simply to save time. But when one has to deal with the escape of excoriating liquid faecal matter on the skin surface, as in his cases, and as in excision of the caecum and attached ileum, there is a definitely good reason for its use, and I shall, as opportunity offers, test it in cases in which the small bowel has to be opened on the surface.

Results of Colectomy.

It might be assumed that bowel excised by bringing out the ends and restored by clamping the spur and suturing the opening without detaching it from its surface connexions would differ considerably from the normal and be subject to stricture. Yet this has never occurred in any of my cases, and I have not been called upon to do any further operation to improve the condition of the bowel. On the contrary, I once saw the bowel five years afterwards when operating for another trouble, and in this patient I could not have told that it had ever been touched at all. The entire sigmoid had been removed for gangrenous volvulus, and the ends brought out and clamped as described. On looking at the part, I found neither stricture nor adhesions, nor, indeed, anything to suggest that such an operation had been done. The patient was a young lady, 25 years of age. It may, I think, be safely assumed that no inconvenience will follow this operation when once the artificial anus has been satisfactorily closed.

The table of cases shows that I have undertaken colectomy on 18 private patients during the last ten years. Only one died—the patient in which I foolishly attempted primary suture, an otherwise favourable case of malignant growth in the transverse colon. The remaining 17 were done by the glass tube operation, and all recovered, though some of them were advanced in years. Among the most interesting points noted in the table is the long survival of patients who have been operated on for cancerous growths. Of the 17 cases, 3 were non-malignant, and 14 cancer. Of the latter, 8 are still living, and not known to have recurrence; 2 have died from apoplexy, and 4 have died from recurrent growth at two and a half, three and a half, three and a half, and seven years respectively. It would be difficult to find another group of cancer cases showing such a satisfactory result. I certainly could not match it in any other branch of my work. Beyond the ten years I know of several other cases living and well, but thought it undesirable to complicate the matter by reference to patients outside the period selected.

Colectomy.

All cases operated on in private practice, 1901 to 1911—18 cases; 6 males, 12 females.

Mortality.—1 death (primary suture), 17 recoveries (glass tube operation).

Situation.—Caecum 7, sigmoid 8 (3 volvulus), colon 3.

Age.—20-30, 2; 30-40, 2; 50-60, 8; 60-70, 5; 70-80, 1.

Life after Operation.—Non-malignant: All living 3, 9, and 10 years. Malignant: 8 living ½, 1½, 2½, 3, 3½, 6, 7½, 7½ years; died, recurrence 2½, 3½, 3½, 7 years; died, apoplexy ½, 2½ years.

Excision of Rectum.

There still remains the lowest portion of the large bowel to be dealt with, the rectum, and I do not propose to ask your attention now to any conditions of this part, except those which call for excision. One may sometimes attempt a resection of the rectum for other affections than malignant growths, but too rarely for such cases to have any influence upon our general method of operating. I have, indeed, excised syphilitic strictures, but it is long ago, and now it seems to me that such a serious operation as resection should be reserved for those cases in which the disease will prove fatal if not removed, the rest, if needing it, being treated by iliac colotomy. I have already expressed the view that a well-planned colotomy is not inconsistent with health and reasonable comfort, or with the pursuit of ordinary avocations when a little consideration is extended to the person who has had to suffer this misfortune. If this were more generally admitted, some lives—perhaps many—that are risked and lost would be saved, and many that struggle on to the end in misery would have some comfortable days in store for them. All cases of advanced cancer of the rectum, incurable fibrous stricture from syphilis or other cause, some recto-vesical fistulae, and some tuberculous and other ulcerations should be treated by colotomy.

A Preliminary Colotomy.

It is also sometimes desirable in conjunction with resection. This has not been at all a frequent practice with me, but I am inclined to think it might have been better if I had made it more frequent. Does a preliminary colotomy lessen the risk of excision? Yes, it does. I think this cannot be doubted, and if so one should give great weight to the fact in all the more serious cases. Amongst these I would certainly include the high resections in poor types of patient, especially males in whom the operation is more difficult and the bone is more frequently cut. I would also include all cases in which the double route operation is adopted, especially as a transverse section of the bowel gives a very good form of artificial anus. Not only does a preliminary colotomy lessen the risks of the operation, but it expedites healing, and I consider these good reasons should lead us to make more frequent use of it.

Restoration of the Rectum.

Another general point in which my experience does not coincide with that of most surgeons is regarding the value of retaining any portion of healthy bowel that may be situated below the disease. I have long come to the conclusion that an attempt to retain the anus with more or less of the lower end of the rectum is bad practice. It is more often a source of inefficiency and trouble than an advantage from the functional point of view, while the operator's anxiety to reconstruct a normal passage conduces to local recurrence by restraining his freedom in removing the growth. However carefully one adapts the parts the resulting anus is rarely better, and often not so good as one placed high up at the top portion of the wound beside the sacrum (Fig 10). In this position the bowel comes

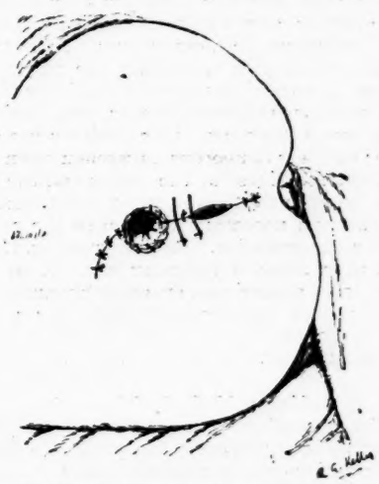

Fig. 10.—Excision of rectum, completed.

to the surface with a sharp turn which I believe assists considerably in comfortable retention of the motions in the absence of an expulsive effort.

A third point in which all now agree is the value of retaining the bone. In my earlier cases with Kraske's incision the loss of bone support to the pelvic floor was seriously felt in the frequent occurrence of extensive prolapse. I designed a somewhat uncomfortable spring truss to obviate, or assist in obviating, this trouble, and had to use it in all high resections. Now that the bone is not sacrificed the truss has been given up, for prolapse never occurs when a good union has been obtained.

Excision in Women.

In women it is frequently necessary, and perhaps always desirable, to incise or remove part of the posterior wall of the vagina. This gives such free access to the interior of the pelvis that the posterior incision, as a rule, need not involve the bone at all, being carried up and terminated on the right side of the coccyx. In the male, one cannot

obtain room to excise more than three or four inches of bowel without cutting across the bone. When the disease is higher I continue the incision along the lower half of the right side of the sacrum, and then turn it across the bone at right angles, dividing the bone with long, sharp bone forceps. This permits the whole flap to be turned to the left, and gives good access to the upper portion of the rectum, though not quite so good as when the bone is excised. Bone forceps are to be preferred to the saw, as a smaller incision suffices, and altogether there is less risk of destroying the sources of nutrition to the flap. Rough edges are smoothed away with "nibbling" forceps, and usually a little bone has to be nibbled away from the top right hand corner to accommodate the sacral anus.

The Double Route Operation.

On the introduction of the double route operation I commenced to use it. My first four cases were female patients at the Royal Infirmary, and good subjects, though the growths were bad. They did well, and I was rather favourably impressed. The fifth was a gentleman, aged 51, of neurotic type, operated on in private practice. He died on the sixth day, having suffered first from shock and finally from sepsis. A mortality of 1 in 5 is, perhaps, not excessive for such a terrible clearance of the pelvis, but the first death pulled me up and led me to reconsider the position. On the whole it seemed to me that so extensive an operation was not justified by the circumstances in the average run of cases, though it might be occasionally employed with advantage. It so happens that I have not made use of this operation again since, but that does not mean that I have altogether abandoned it. It has been recommended with an admitted mortality of 30 per cent., which, in my judgement, is preposterous. No operation in the present day could survive such a mortality. But this is not necessary. With due care and proper selection of cases half that death-rate ought to cover our errors in judgement and technique, and then it might be employed for cases of cancer extending high up in the rectum, or in which lymphatic infection was probably taking place, as in colloid growths, or growths in which an extension can be felt spreading up the meso-rectum. After the first two cases I gave up the plan of bringing the pelvic colon down to the anus. It seemed to me safer and better to make use of it for a permanent iliac colotomy, and I think I should always adhere to this view. The double route operation is both easier and less dangerous in women than in men on account of the roominess of the pelvis and the presence of the uterus between the bowel and the bladder. The idea that it is always necessary to remove the whole meso-rectum is an exaggeration. Rectal growths, though more malignant than those in the colon, are not on a par with tongue or breast cancer, and operations planned on similar lines would render surgery accountable for a loss instead of a gain in the average duration of life of our cases of cancer of the rectum.

Ordinary Method of Operating.

My ordinary method of operating is as follows: The rectum having been prepared, the patient is placed in the lithotomy position with a sandbag under the sacrum, and, if a male, a bougie is passed to indicate the position of the urethra. An incision is then made round the anus and on to the coccyx. This wound is deepened into the ischio-rectal fat, and then with scissors the lower part of the rectum with the anus is cut free. The dissection is carried on in front until the prostate is reached, when the bowel is peeled off this organ with the finger until the peritoneum of Douglas's pouch is exposed but not now opened. During this first stage of the operation no dangerous but a good deal of smart haemorrhage and free oozing may take place, yet time must not be expended by laborious searching for and tying innumerable small vessels, most of which bleed only for a short time. The "spouters" are at once clamped; all the rest are checked by stuffing a sponge into the wound on the side cleared whilst one progresses with the other side. Nothing can compete with sponges for this purpose, and nothing but prejudice prevents us from using them. In all mouth and rectal operations I have continued to use sponges with comfort to myself and, I believe, benefit to my patients.

If the patient is a female and the growth in the lower part of the rectum I always cut into the vagina, usually removing more or less of the posterior wall, and here again sponge compression is useful.

When the dissection in either sex has reached the peritoneum and more has to be done, I remove the crutch and turn the patient well over on to the left side with the right leg flexed on the abdomen. The incision is carried as much higher on the right side of the coccyx and sacrum as is necessary. In women, with the vagina open, this usually gives enough room. In men a transverse cut to the left must be made permitting either the separation of the coccyx or the section of the sacrum. The flap containing the bone having been turned to the left, the peritoneum is opened and the bowels packed off with gauze. Then with an aneurysm needle the large vessels of the meso-rectum are tied, and the connexions cut until enough bowel is freed to permit of an artificial anus without tension at the top of the wound. This is the best place for it, as not only is less free bowel necessary for this position, but the sharp turn due to bringing it out posteriorly is a great aid in future control, as is also the firm bony support partly surrounding the new anus. When the necessary amount of bowel is free and brought down, the pack is taken out of the pelvis, and the peritoneum of Douglas's pouch is sutured to the anterior and lateral aspects of the rectum. Then the flap of bone is trimmed and replaced, and the bowel is cut off flush with the skin to which it is fixed by a continuous haemostatic suture of green gut. Two or three very deep sutures of strong salmon gut are passed to close the perineum for two or three inches below the artificial anus, most of the rest of the wound being left open for packing with iodoform gauze (Fig. 10).* In the female, of course, the vagina must be repaired. It heals very well. When the operation is completed a morphine suppository may be introduced before the dressing is applied.

Dangers of the Operation.

The dangers of this operation are shock and sepsis. Shock means loss of blood, and is to be avoided by quick and dexterous operating. The hands should be bare, and sponge compression should be used to stop oozing. Sepsis is rarely dangerous except from sloughing of the lower part of the bowel due to loss of blood supply. This is unusual, but cannot always be guarded against. Fortunately it is rarely serious when it does occur, but it allows the bowel to separate from the top of the wound, and ultimately when the wound is healed the opening is placed lower down, and more in a line with the rest of the rectum, which means less control and more liability to prolapse.

The wound usually heals kindly, though it is not, and with this operation cannot be, aseptic. The pack should be removed the following day, and subsequently wet dressings are the best. Chinosol and aluminium acetate both make excellent lotions. As in all rectal operations, it is important to keep the bowels moving. The old plan of locking them up was the bane of rectal surgery. Plenty of fluid should be given from the first. There is always loss of blood in excising the rectum, and the sooner this loss is made up the less the danger from shock and sepsis.

Selection of Cases.

To be successful in this operation one must not only operate well, and carry out the subsequent treatment with care, but one must also recognize that this is one of those serious undertakings for which a wise discretion must be exercised in the selection of suitable cases. I used to accept almost all the cases which came under my observation, but lately have tended to weed out more and more the less favourable, and give them colotomy instead. Age and constitutional condition are important points, and must be considered together. I have done an extensive excision successfully at 74, and without anxiety, but the subject was of the healthy, wiry type. Too many men and women, especially in the well-to-do class, have by the time they reach 60 destroyed their tissues in various ways, and rendered themselves unfit subjects for an operation which calls for courage and physical fitness, for a capacity to resist shock and septic infection, and to carry on healthy repair for some weeks. From 55 onwards selection should be rigidly practised.

* For Figs. 6, 7, 9, and 10 I have to thank my colleague, Mr. Robert E. Kelly, Assistant Surgeon, Royal Infirmary.

Results of Excision of the Rectum.

Operations for cancer of the rectum are on the whole less favourable than those on the colon. Contrasting the two I should say in excision of the rectum we have more haemorrhage and shock, usually a more difficult operation, less freedom in removal, a larger and more serious wound to heal, and a more malignant type of cancer to deal with. On the whole the results of excision of the rectum are good, but there are reasons why we should expect a slightly higher primary death-rate, and a greater probability of recurrence than in the case of colectomy.

The table shows that during the last ten years I have excised the rectum for cancer in 28 private patients. Two deaths occurred, one the double route operation in a male, the other a high resection in a female. Neither were good subjects, and I should now probably exclude them both, doing a colotomy instead. Of the 28, thirteen are still living at 1, 1, 2, 2½, 3, 3¼, 3½, 5, 6, 6, 7½, 9, and 10 years respectively. Of the remaining 15, twelve died from recurrence after an average duration of life of thirteen months. One died from other cause without recurrence, and two, as stated, died from the operation.

Excision of Rectum.

All cases operated on in private practice, 1901 to 1911—28 cases, all cancer; 15 males, 13 females.

Mortality.—Two deaths (1 double route, male; 1 high resection, female).

Age.—Under 50, 2; 50–60, 13; 60–70, 12; 70–80, 1.

Life after Operation.—Living, 13: 1, 1, 2, 2½, 3, 3¼, 3½, 5, 6, 6, 7½, 9, and 10 years. Died from recurrence, 12. Average duration, 13 months. Died from other cause, 1. Died from operation, 2.

Gentlemen, I offer these results of personal experience with much deference to my fellow surgeons, of whom so many have enjoyed better opportunities and are better fitted to benefit by them than I am. Doubtless some of my views will not meet with your approval, but I hope that here and there some fact or opinion may be found which will prove helpful to others, and this hope is my only justification in submitting to you these experiences in operations on the large bowel.

REFERENCE.

[1] *Liverpool Medico-Chirurgical Journal*, 1895.

Memoranda:

MEDICAL, SURGICAL, OBSTETRICAL.

AMYL NITRITE IN CARDIAC DISPLACEMENT.

MR. A. MCK., aged 41, consulted me some weeks ago because of severe attacks of dyspnoea which recurred every two days. He was feeble, and able for very little exertion. The history was that two years ago he had a fluid pleurisy. For this he was tapped behind, with a negative result, and again in the nipple line on the left side, where his doctor drew off 5 oz. of fluid. As a result of the adhesions the heart was anchored much outside its usual position, the apex beat being 2½ in. outside the nipple line. I advised amyl nitrite for the anginal attacks. He used a 5-minim capsule during the next attack. I saw him two days later, and the result has been far greater than I anticipated; in his own words, he felt "as if the heart were being pulled right out." When I examined his heart I found the apex beat just inside the nipple line. For two years he had been unable to stoop, he now was able to bend down and pick a pin from the floor. Before his treatment he had these anginal attacks every two days or so; he has had none since. In my opinion, the amyl nitrite so allowed the heart to act that it broke away from its false moorings. Now under tincture of strophanthus it is fast coming back to its original condition.

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Kelowna, British Columbia.

RIGHT OVARIAN DERMOID.

MRS. X. stated she was suffering from "abscess of the womb" of about ten months' duration. Twelve months previous to the onset of her present symptoms Caesarean section had been performed in a provincial hospital.

There was a foul-smelling yellowish discharge from the vagina. A tumour about the size of an apple was hanging by a pedicle about 1 in. thick from the posterior fornix to the right of the middle line, and surrounding the pedicle at its exit was what felt like a cervix, but owing to the rigidity of the abdominal muscles a thorough examination could not be made. On the posterior aspect of the tumour was a small, hard, sharp mass, the mere touching of which caused the patient exquisite pain.

The patient was admitted, and under a general anaesthetic Professor Cameron found the uterus super-involuted and lying above the tumour at the level of the upper border of the symphysis in a position of retroversion. The hard mass on the posterior aspect of the tumour consisted of several teeth and a quantity of hair. With the écraseur the pedicle with tumour was removed. What appeared to be cervix surrounding the pedicle was granulation tissue. The patient was dismissed well ten days after the operation.

The dermoid had apparently worked its way through the pouch of Douglas on the right side.

I have to thank Professor Cameron for permission to publish this interesting case.

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PERFORATION OF THE TYMPANUM AFTER SYRINGING.

A WOMAN, aged 29, consulted her family physician, telling him she felt "run down." On rising that morning she was aware of a peculiar sensation in the left ear, but there was no pain and she did not feel deaf. The feeling was as if something was in the ear. Two weeks previously she had suffered from sore throat, which was now better.

The doctor syringed her ear. Afterwards she walked about town for some two and a half hours. On her way home in a tramcar she was seized with severe pain in the ear. A yellow watery discharge made its appearance, and the ear became very deaf. That night the pain prevented sleep, and some blood escaped from the ear.

I saw her after this. The pain in the ear had ceased, but a profuse muco-purulent discharge was coming from the canal. Covering the region of the drum there was a white sodden mass of dead epithelium, which was easily removed with the help of a little hydrogen peroxide. It came away in the form of a plug, exposing a large perforation involving the whole of the drum with the exception of Shrapnell's membrane. The handle of the malleus was absent, and the external auditory meatus was narrowed by inflammatory swelling.

With appropriate treatment the inflammation and discharge subsided, but the hearing has remained markedly defective. The patient maintains that the pain, perforation, and subsequent deafness were caused by the force used in syringing.

I communicated with the patient's doctor, who was surprised to hear the sequel to his case. He told me he examined the ear and found the canal a little red and swollen. He saw something which looked like a "crust" lying in the canal.

It is interesting to note that two months previously the patient was under my care, suffering from deafness in the right ear, which was due to an old-standing dry perforation dating from acute otitis media in childhood. At this time the drum of the left ear was frequently examined, and also the hearing, both appearing quite normal.

The explanation, in my opinion, is as follows: In certain cases perforation of the tympanic membrane takes place in a most remarkably insidious manner. The following case illustrates this:

A woman, aged 21, was under my care suffering from discharge from the right ear through an old perforation. The left tympanic membrane appeared in all respects normal. Quite suddenly a discharge appeared from the left meatus, and examination showed a fairly extensive perforation below the handle of the malleus. The drum exhibited only the faintest trace of redness, localized to the handle of the malleus. There was no pain or any other symptom except discharge.

I think the former case was undoubtedly of this character. The perforation was probably already present when her doctor syringed the ear. The "crust" which he saw was probably a pent-up discharge. Forcible syringing, especially if all discharge and cholesteatomatous matter was not removed, would account for an acute condition being set up in the middle ear. The case was probably of a tuberculous nature, although I could find no evidence of tuberculosis.

The case shows the necessity of a thorough examination of an ear before syringing, and of careful examination afterwards, in order to be sure that all discharges have been removed.

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Reviews.

A WELL FILLED LIFE.

IT has become the fashion of recent years for almost every one who has any pretension to social or professional distinction to give to the world the recollections and impressions of his life and times. The interest of such records naturally depends entirely upon the manner of life led by their author. Few of the diarists and memoir writers who have lately flooded the market with their reminiscences can boast a more varied and interesting career than Surgeon-General Sir ANTHONY DICKSON HOME, V.C., K.C.B., whose *Service Memories* has recently appeared under the editorship of Lieutenant-Colonel CHARLES H. MELVILLE, R.A.M.C.[1] Unlike the majority of writers of reminiscences, Sir Anthony Home never intended his memoirs for publication, and yielded to the solicitations of his friends only on condition that whatever profits should accrue from the sale of his book should be devoted to some charitable fund connected with the Royal Army Medical Corps. *Service Memories*, therefore, is merely a series of random jottings, written down at the request of an old friend and brother officer, and strung together by Colonel Melville into one continuous narrative; it does not form anything like a complete life of its distinguished author, or even a full record of his service in almost every quarter of the globe. Indeed, the writer is far more concerned with the account of what he saw than with what he did. It is only from the notes of his editor that are to be gathered, for example, the details of the deed which won him the Victoria Cross (an episode which Sir Anthony passes over in complete silence), and of the extraordinary success of his exertions during the Ashanti war of 1873–4, exertions which, in the opinion of Colonel Melville, contributed largely towards the ultimate success of the British arms. This modesty is one of the chief attractions of a book full of incident and colour, and crowded with recollections of stirring experiences by flood and field.

Born at Dunbar in 1826, Sir Anthony Home graduated M.D. at St. Andrews in 1847, and entered the Army Medical Service in the following year. After three years' service with his regiment in the West Indies, the young surgeon was transferred to Nova Scotia, and from thence to Guernsey, Ireland, and Gibraltar, which latter station he left in August, 1854, to accompany the 8th Hussars to the Crimea. There he remained until the end of the war; and perhaps no part of his reminiscences is more interesting than that in which he bears eloquent testimony to the needless suffering caused in the British lines by the dogged adherence of those in command to the antiquated methods of transport and sanitation which had been employed during the Peninsula war.

Surgeon Home's first experience of active service was quickly followed up by others. Transferred to India at the outbreak of the mutiny, he was present at the relief of Cawnpore and Lucknow. At the latter place he won the Victoria Cross by his heroic defence of the wounded left behind by the relieving column when Havelock finally succeeded in forcing his way into the Residency; and six months after his return to England he was sent to China with the expeditionary force commanded by Lieutenant-General Sir James Hope Grant. Less than a year after the close of the Chinese campaign, Surgeon Home accompanied the troops embarked for Canada in preparation for the threatened war between England and the United States, and, thanks to the peaceful termination of the negotiations between the two countries, was able to visit Baltimore and Washington and see something of the American army in the field. A short period of service in England and India was terminated by the Maori war of 1863–64, when Surgeon Home was transferred from Bengal to New Zealand. There he had ample opportunities for studying the methods of warfare in vogue amongst a primitive people, and he does not fail to point out the striking similarity existing between these methods and those employed by the Boers during the last South African war.

With the Maori campaign Sir Anthony Home's reminiscences close, though more than twenty years of work and honours were to elapse between the end of the war and his retirement from the army. We have already mentioned the valuable services which he rendered ten years later when appointed to the forces in Ashanti, services which were rewarded on his return home in 1874 by the K.C.B.

The rest of his term of service, save for a brief interlude as in Cyprus, was spent either in England or in India; and his retirement in 1886 closed a career of singular usefulness and distinction. We venture to prophesy that those to whom the modest record of this career does not appeal will be very few and far between. As the work of one of the few surviving eye-witnesses of the great mid-Victorian wars, the book is of genuine historical value, and the absolute simplicity of its setting is in keeping with the character of a man who combines in his own person the finest qualities of his double profession—the physician and the soldier.

TWO FAMOUS TRIALS.

IN the series of Notable English Trials[2] Mr. G. H. KNOTT's *Trial of William Palmer*,[3] the Rugeley murderer, is the fourth. The book opens with an introduction in which there is a general account of the incidents which led up to the murder, and a short history of William Palmer's previous life. This is further summarized in a table of the leading dates, and there are lists of the judges and of the counsel and witnesses on both sides. Mr. Knott has thought it unnecessary to print the opening of the case for the Crown by the Attorney-General. He gives the evidence for the prosecution, the speech for the defence, the evidence for the defence, the Attorney-General's address to the jury, the charge by Lord Campbell, and in an appendix he prints an extract from the diary of Lord Chief Justice Campbell, a letter purporting to be written to the Lord Chief Justice by the Rev. Thomas Palmer, a brother of the murderer, and short biographical accounts of the judges and counsel. There are also facsimiles of letters by the murderer, and of two pages of his diary. The book is compiled from a verbatim report of the trial published by Mr. Angelo Bennett in 1856 from his shorthand notes, and the author says that he has had the benefit of the professional skill of Dr. William Robertson of Leith, who has read the proofs. It is further enriched by portraits of the Lord Chief Justice, Mr. Baron Alderson, Sir Alexander Cockburn, Mr. Serjeant Shee, and the murderer. So far as all this goes the author has done his work well, but the serious fault is that Mr. Bennett's report appears to be defective, and the author has not filled up the gaps by research elsewhere. For instance, the contemporary numbers of the *Times* might have supplied parts which were omitted. It strikes the reader as strange that the evidence of Dr. Bamford, who attended the deceased, John Parsons Cook, is omitted; yet he appears to have been called, for the Attorney-General (page 234) says "We have it from Dr. Bamford himself." Again, Dr. Harland (who made the *post-mortem* examination) is said to have reported (page 56) with Dr. Monckton on the state of the spinal cord, but this report is not given. The deposition of Mr. Jones, a medical practitioner who was present at the death and gave evidence at the inquest, was read by Mr. Serjeant Shee but is not printed. Further, in the Attorney-General's address he blamed Mr. Serjeant Shee for having protested "on his honour" his conviction of the prisoner's innocence, but in the report of Shee's speech this expression is not to be found; as the story has often been told since, one would like to know what ground was there for the statement that Shee told the jury "on his honour" he was convinced of the prisoner's innocence? The long letter which purports to be from the Rev. Thomas Palmer is spoken of by the author as "the letter we print from Palmer's brother" (page 315) yet in the extract from the diary of Lord Campbell we read "the Rev. T. Palmer has since disclaimed the pamphlet and it is said to have been written by a blackguard barrister." As the pamphlet is most virulent and abusive we do not think it should have been printed if there is any doubt of its genuineness. There are slips which we think the medical collaborator might

[1] *Service Memories.* By Surgeon-General Sir A. D. Home, V.C., K.C.B. Edited by Charles H. Melville, Lieutenant-Colonel, Royal Army Medical Corps, and Brevet Colonel. With portrait. London: Edward Arnold. 1912. (Med. 8vo, pp. 347. Price 12s. 6d. net.)

[2] Notable English Trials. Edinburgh and London: William Hodge. 1912.

[3] *The Trial of William Palmer.* Edited by George H. Knott. (Med. 8vo, pp. 320. 5s. net.)

have prevented. For example, Sir Benjamin Brodie is described as Surgeon to "St. James's" Hospital (page 67). We read (page 86) of a mysterious poison mentioned by Professor Christison called "exhetwick." Then we have such an expression as "a little of the excoriation was rubbed off" (page 58). The state of the tongue is not mentioned in Dr. Harland's examination-in-chief, but is made the subject of cross-examination. The alkaloid of nux vomica brucia is spelt all through "bruchsia." On page 78 we hear of the "succulent" contents of the intestine, evidently a mistake for "faeculent." Dr. Todd, the well-known physician of King's College Hospital, is said in a speech for the defence (page 132) to have been "a gentleman whose practice does not appear to have been so much that of a physician as that of a surgeon," the words "physician" and "surgeon" being evidently transposed. On the top of page 116 several words have been left out, perhaps a whole line, so that the passage as printed does not make sense. Besides the omissions to which we have referred we note that of the evidence of Mr. Wetherby, Clerk of the Course; of Mr. Deane, solicitor to the Prince of Wales Insurance Company, which had refused to pay a heavy insurance effected by the prisoner upon the life of his brother Walter; and of the letters from this solicitor which were read in court. These omissions seriously affect the value of the book as a record for the use of those interested in legal medicine, but as a popular account of the trial it may gain by being reduced in length.

The latest volume of the series is the *Annesley Case*,[4] where the question was whether one James Annesley was the son of Lord Altham by his wife Moll Sheffield, natural daughter of the Duke of Buckingham. The story has been in part told by Smollett, and provided the groundwork for Charles Reade's *The Wandering Heir*. Not long after the alleged birth in 1715, Lord Altham and his wife quarrelled, and did not live together again. It seems practically certain that soon after this strange nobleman's death in 1727 his brother (who had taken possession of any property he left) kidnapped the boy and shipped him as an indentured "slave" to the West Indies. In 1741 James was brought home in a ship of Admiral Vernon's squadron, and his cause was taken up by an enthusiastic Scot, Daniel MacKerchen, and the issue came to trial in Dublin in 1743. The case has no medico-legal bearings; its interest is psychological, as an illustration of the fallibilty of human testimony. Many of the witnesses on one side or the other must have been perjured, but others may merely have forgotten. As the trial ended in a verdict for the claimant it might be assumed that it was the defendant's witnesses who swore falsely were it not that the principal witness for the defence, the maid who was with Lady Altham at, before, and after the date of the alleged birth and had denied that it did or could have occurred, was tried for perjury and acquitted. Mr. ANDREW LANG, who has edited the volume and evidently studied the evidence with great care, has written an introduction which is positively malicious to his readers. Again and again he builds up a case which seems convincing, and then in a sentence beginning with a "but" wholly demolishes it. The judges who heard the claimant's case were altogether puzzled by the evidence, and so is Mr. Lang, but his introduction is most entertaining, and as it fills some eighty pages the volume is well worth possessing.

AIR ANALYSIS.

DR. J. S. HALDANE'S *Method of Air Analysis*[5] is an admirably clear description of the apparatus and methods of procedure requisite for the analysis of air for various purposes. It makes no pretence to be a complete treatise on gas analysis, and a general knowledge of the methods of this branch of work and of laboratory manipulation is assumed. The methods described are for the most part devised, wholly or in part, by the author, and have been published in the *Journal of Physiology*, the *Journal of Hygiene*, etc. The operations dealt with are such as are necessary in the examination of the air of mines, of exhaust gases, and of the gases usually requiring to be analysed accurately in connexion with physiological experiments. The larger apparatus first described requires only about 20 c.cm. of air for analysis, and with this quantity the percentages of oxygen, carbon dioxide, methane, etc., can be determined to two decimal places. A smaller portable apparatus, for taking into mines, etc., is also described; by means of this the analysis is made on the spot, about 10 c.cm. of air being employed; the limit of error in this case being about 0.01 per cent. The somewhat elaborate corrections sometimes necessary in order to express results in the most convenient form—as, for example, the "respiratory quotient" in the case of breathed air, or the proportion of "black damp" in the air of a mine—are clearly described. Other chapters are devoted to apparatus and methods for ascertaining the approximate proportions of oxygen and of methane, etc., in air by means of the behaviour of flames; the necessary manipulations for detecting and estimating small proportions, from 0.01 per cent. upwards., of carbon monoxide in air by various blood tests, are also described. To any one likely to be engaged in such tests of air this little book will be most useful, while it can be read with interest by others whose concern is only with the results deduced from the operations described.

NOTES ON BOOKS.

THE eleventh edition of Dr. DORNBLÜTH'S remedies used in modern medicine[6] is in effect a cross between special pharmacopoeias such as those of Martindale and Squire, and the pages on drugs and their use to be found in some visiting lists. There are chapters on prescribing and lists of diseases, with the dietetic and drug treatment commonly found useful in connexion with them, but the greater part of the book deals with the composition and uses of the remedies commonly mentioned in books on therapeutics. The amount of information supplied is large but not always easy to use, since to find a prescription of any given remedy may necessitate prolonged search in default of pre-existing knowledge either of its principal ingredient or most obvious property. Nor will those little versed in chemistry always benefit by the search, since in many cases the explanation of the nature of a proprietary remedy consists of a single word demanding close analysis before any real knowledge can be derived from it; brommethylaminodimethylisovalerylpropyloxyacetat as an explanation of "Quietol" is a case in point.

The effects of mountain climates upon tuberculous disease have been long enough under observation to warrant close scientific criticism. In earlier days the high altitudes were only used on very broad lines for certain well-defined classes of tuberculous lung disease, with the natural result that they sometimes proved to be utterly unsuitable. Closer observation founded on accumulated experience has demonstrated the fact that varying degrees of altitude produce marked difference in normal physiological processes, and these must be taken into account in advising consumptive patients. These points are well set out in a monograph edited by Dr. G. SCHRÖDER of Schömberg,[7] in the Black Forest of Würtemburg, where a very large number of consumptives have been treated in sanatoriums. Voluminous statistics and a good account of the flora and fauna of the district are appended, forming a useful contribution to the steadily accumulating experience of the results of climatic treatment associated with compulsory hygiene.

Dr. VARIS might have done better if he had restricted his book, *A Study of Malaria and Beri-beri*,[8] to the first-named subject. The malarial part of the book shows careful thought and study, and gives the reader a very good description of the disease.

[4] *The Annesley Case.* Edited by A. Lang. (Med. 8vo, pp. 370, illustrations 4. 5s. net.)

[5] *Methods of Air Analysis.* By J. S. Haldane, M.D., LL.D., F.R.S. London: Chas. Griffin and Co., Limited. 1912. (Post 8vo, pp. 140, 24 illustrations. 5s. net.)

[6] *Die Arzneimittel der heutigen Medizin.* Von Dr. Otto Dornblüth in Wiesbaden. Alfte Auflage. Würzburg: Curt Kabitzsch. 1911. (Crown 8vo, pp. 510. M. 7.60.)

[7] *Das Klima von Schömberg*, and its Importance in the Treatment of Chronic Tuberculosis of the Lungs. By Dr. G. Schröder, Superintendent of the new sanatorium at Schömberg, with the assistance of Professor Meyer of Stuttgart and L. Pfeiffer of Schömberg. Würzburg: Curt Kabitzsch. 1912. (Med. 8vo, pp. 140. M.2.)

[8] *A Study of Malaria and Beri-beri.* By S. M. Varis, M.D., C.M. Edin. Allahabad: The Pioneer Press, 1912. (Demy 8vo, pp. 482.)

Nova et Vetera.

SAMUEL PEPYS AND THE ROYAL SOCIETY.

THERE are many references to the early days of the Royal Society in Pepys's *Diary*. Under date January 9th, 1664–65, he records that he saw the Royal Society "bring their new book, wherein is nobly writ their charter and laws and comes to be signed by the Duke as a Fellow and all the Fellows hands are to be entered there and lie as a monument and the King hath put his with the word FOUNDER." The pious founder was fond of a joke at the expense of the Society. On February 1st, 1663–64, Pepys records:

Gresham College he mightily laughed at for spending time only of weighing of ayre and doing nothing else since they sat.

Pepys's struggles with the orthography of the name of the first President, Lord Brouncker, are amusing. He writes it sometimes Brunker, sometimes Brunkard, sometimes Bruncker; later, when he had doubtless become better acquainted with the noble lord, he learned to spell his name. Pepys was elected a Fellow on February 15th, 1664–65. On that day he records:

With Creed to Gresham College, where I had been by Mr. Povy the last week proposed to be admitted a Member, and was this day admitted by signing a book and being taken by the hand by the President, by Lord Brunkard and some words of admittance said to me. But it is a most acceptable thing to hear their discourse and see their experiments which were this day of the nature of fire and how it goes out in a place where the ayre is not free, and sooner out where the ayre is exhausted which they show by an engine on purpose. After this being done they to the Crowne Taverne behind the 'change, and there my Lord and most of the company to a Club supper; Sir P. Neale [Sir Paul Neile], Sir R. Murrey [Sir Robert Moray, one of the founders of the Society], Dr. Clarke, Dr. Whistler, Dr. Goddard, and others of most eminent worth. Above all, Mr. Boyle to-day was at the meeting, and above him Mr. Hooke, who is the most and promises the least of any man in the world that I ever saw.

In the following month Pepys made a statement to the Society giving an account of what information he had received from the master of the Jersey ship which had been in company with Major Holmes in the Guinea voyage concerning the pendulum watches. On March 1st, 1664–65 is the entry:

And this day I did pay my admission money, 40s., to the Society. Here was very fine discourses and experiments, but I do lacke philosophy enough to understand them, and so cannot remember them.

On November 14th, 1666, Dr. Croone told him that

at the meeting at Gresham College to-night, which it seems they now have every Wednesday again, there was a pretty experiment of the blood of one dogg let out, till he died, into the body of another on one side, while all his own run out on the other side. . . . The first died upon the place, and the other very well, and likely to do well. This did give occasion to many pretty wishes, as of the blood of a Quaker to be let into an Archbishop, and such like; but, as Dr. Croone says, may if it takes, be of mighty use to man's health, for the amending of bad blood by borrowing from a better body.

On November 16th there is the following entry:

This noon I met with Mr. Hooke, and he tells me the dog which was filled with another dog's blood, at the College the other day is very well, and like to be so as ever, and doubts not its being found of great use to men; and so do Dr. Whistler, who dined with us at the taverne.

Again, on November 28th

Mr. Carteret and I to Gresham College, where they meet now weekly again, and here they had good discourse how this late experiment of the dog, which is in perfect good health, may be improved for good uses to men.

A year later (November 21st, 1667) we hear of the application of transfusion to man. Pepys said the Fellows discoursed of:

A man that is a little frantic, that hath been a kind of minister, Dr. Wilkins saying he hath read for him in his church, that is poor and a debauched man, that the College (Gresham) have hired for 20s. to have some of the blood of a sheep let into his body, and it is to be done on Saturday next. They purpose to let in about twelve ounces; which, they compute, is what will be let in in a minute's time by a watch. They differ in the opinion they have of the effects of it; some think it may have a good effect upon him as a frantic man by cooling his blood, others that it will not have any effect at all. But the man is a healthy man, and by this means will be able to give an account what alteration, if any, he do find in himself, and so may be usefull.

This man, we are told by Mr. Wheatley, the learned editor of the immortal diary, was Arthur Coga, who had studied at Cambridge and was said to be a bachelor of divinity. He was indigent, and "looked upon as a very freakish and extravagant man." Dr. King, in a letter to the Hon. Robert Boyle, remarks "that Mr. Coga was about thirty-two years of age; that he spoke Latin well when he was in company which he liked, but that his brain was sometimes a little too warm." The experiment was performed on November 23rd, 1667, by Dr. King at Arundel House, in the presence of many spectators of quality and four or five physicians. Coga wrote a description of his own case in Latin, and when asked why he had not the blood of some other creature instead of that of a sheep transfused into him, answered, "*Sanguis ovis symbolicam quandam facultatem habet cum sanguine Christi, quia Christus et agnus Dei.*" Coga was the first human being in England to be experimented upon; previous experiments were made by the transfusion of the blood of one dog into another.

On November 30th we hear more of Coga. Pepys went to the election of officers on that day, and narrowly escaped an undesired honour. He was—

near being chosen of the Council; but am glad I was not, for I could not have attended, though above all things I could wish it; and do take it as a mighty respect to have been named there.

After the elections he went to a tavern with several of the learned men, where they had much good discourse.

But here above all I was pleased to see the person who had his blood taken out. He speaks well and did this day give the Society a relation thereof in Latin saying that he finds himself much better since and as a new man but he is cracked a little in his head though he speaks very reasonable and very well. He had but 20s. for his suffering it and is to have the same again tried upon him; the first sound man that ever had it tried on him in England and but one that we hear of in France which was a porter hired by the virtuosos.

On March 15th, 1664-65, he records that he went to Gresham College,

where, among other good discourse, there was tried the great poyson of Maccassa upon a dogg, but it had no effect all the time we sat there.

We learn from Birch's *History of the Royal Society*, that an experiment "of trying to poison a dog with some of the Macassar powder in which a needle had been dipped was made, but without success." Again, on April 17-19th, 1665:

We to Gresham College, where we saw some experiments upon a hen, a dogg, and a cat, of the Florence poyson. The first it made for a time drunk, but it come to itself again quickly; the second it made vomit mightily, but no other hurt. The third I did not stay to see the effect of it, being taken out by Povy.

With reference to this passage, Mr. Wheatley quotes from Birch's *History*:

Sir Robert Moray presented the Society from the King with a phial of Florentine poison sent for by his Majesty from Florence, on purpose to have those experiments related of the efficacy thereof, tried by the Society. The poison had little effect upon the kitten.

We hear more of the poison on May 3rd, 1665, when it is recorded in the *Diary*:

And so out to Gresham College, and saw a cat killed with the Duke of Florence's poyson, and saw it proved that the oyle of tobacco drawn by one of the Society do the same effect, and is judged to be the same thing with the poyson both in colour and smell and effect.

Here, again, we learn something more about this from Birch, who says:

Mr. Daniel Coxe read an account of the effects of tobacco-oil distilled in a retort by one drop of which given at the mouth, he had killed a lusty cat, which being opened, smelled strongly of the oil, and the blood of the heart more strongly than the rest. . . . One drop of the Florentine *oglio di tobacco* being again given to a dog, it proved stupefying and vomitive, as before.

Pepys did not like parting with money; we can therefore imagine his feelings when he had to subscribe to building of a house for the Society. On April 2nd, 1668, he says:

With Lord Brouncker to the Royall Society where they were just done, but there I was forced to subscribe to the building of a College and did give forty pounds; and several others did subscribe some greater and some less sums; but several I saw hang off: and I doubt it will spoil the Society for it breeds faction and ill-will and becomes burdensome to some that cannot or would not do it.

On the same day he experimented with an instrument to improve the hearing:

> Here to my great content I did try the use of the Otacousticon which was only a great glass bottle broke at the bottom, putting the neck to my eare and there I did plainly hear the dashing of the oares of the boats in the Thames to the Arundell Gallery window which without it I could not in the least do and may I believe be improved to a great height which I am mighty glad of.

The apparatus is ridiculed in a contemporary play under the name "Autocousticon," which is said to be "a pair of asses ears and large ones."

Pepys was elected president of the society in 1684, and he held the office for two years. While he speaks of the Fellows as "a set of the finest gentlemen that ever I met withal in my life," he records that on occasion their noble president and others got drunk.

LITERARY NOTES.

THE February number of *Janus* contains a review of Y. Fujikawa's *Short History of Japan*, published in German at Tokyo in 1911. The work appears under the auspices of the Japanese Minister of Instruction. The work deals with periods beginning with mythical times up to 96 B.C. The invention of the healing of diseases is attributed to two deities, Onamuji-no-Mi-Koto and Sukunabikona-no-Mikoto. Disease is caused by divine action, the particular god responsible being Kamino-no-Ke (spirit of the gods); or by devils, evil spirits, or the spirit of a dead man. Morality and neglect, however, were also held to be etiological factors. Sacrifices, prayers, and incantations were used to counteract hostile influence. Later internal medicines were employed. Wounds were dressed by the application of powders and juices. Bleeding was employed, and great use was made of mineral baths and douches. Between 96 B.C. and 709 A.D. Chinese medicine was introduced by way of Korea. Priest healers appeared and taught their art. Pupils were sent to China at the cost of the State to learn medicine. The Code of the Emperor Mommu (702 A.D.) shows that there were then a superior school of medicine, accessible to families from the fifth class upwards, and provincial schools. The course of internal medicine occupied seven years, the other branches shorter periods. A final examination had to be passed in presence of the Minister; successful candidates became ishi or doctors. A few women from 15 to 25 years of age were trained as midwives and surgeons. Then came a period known as "Nara," from the name of the city which was then the capital, and extending from 710 to 784. During that period the priest healer played a large part. A hospital for the sick poor was founded by the Empress Komyo in 758. The Heian period during which Heian (now Kyoto) was the capital, extended from 784 to 1186. Chinese influence predominated. The oldest Japanese medical treatise is the *Ishinho*, written by Yasuhori-Tamba in 892; it is still extant. In it are described various surgical procedures, such as the opening of abscesses with the knife, the application of the actual cautery to ulcers, and the stitching of wounds of the intestine with threads made of the fibre of the mulberry tree. Inflammations were treated by the application of leeches, cold stones or iron, or white of egg. There is record of an operation for atresia of the vagina. Cataract was needled. In the Kamakura period (1187–1333) medicine gained a more important position, and personal observations were recorded. The Muromachi period (1334–1568) was marked by the destruction of buildings, books, and works of art. Nevertheless, some twenty Japanese treatises on medicine are ascribed to this period. In the Azuchi-Momoyana period (1569-1615) we hear of disorders of nutrition, nervous influences and over-pressure as causes of disease. The first Portuguese ship reached Japan in 1542. In 1549 arrived the famous missionary St. Francis Xavier, who brought with him a European doctor, Luis Almeida; he treated the sick gratuitously. From him a Japanese named Pohl learnt something of European medicine. In 1568, after the building of a Catholic Church at Kyoto several missionaries were sent to Japan by Portugal; with them went two physicians, who founded hospitals, treated patients, operated and planted physic gardens. When they were expelled with the missionaries in 1585 two Japanese pupils of the European physicians, Zengoro and Yaseumon, settled at Sakai and practised European medicine. They founded a school, the pupils of which spread abroad the doctrines of the European teachers. In 1597 the Dutch obtained permission to trade with Japan. Some doctors were sent to promote trade under pretext of medical visits. The first physician of the Dutch Company was a German named Caspar Schambergen, who landed in Japan in 1649. He had some pupils, and his school played an important part in Japan. Others followed, and interpreters who had learnt European medicine practised as doctors. Among them may be mentioned Eykin Narabayashi (1643–1711), author of a Japanese translation of the works of Ambroise Paré. For a long time the prohibition to import European books hindered the progress of medicine; this prohibition was withdrawn in 1700 and translations of a number of Dutch, French, and German books (Heister, van Swieten, Boerhaave, Hufeland, Richerand, etc.), were translated. Mohmike introduced vaccination in 1848. Seishu Hanoaka (1760–1833) was the first in Japan who extirpated tumours, amputated limbs, operated for cancer of the tongue and fistula of the anus. Before operating he administered a narcotic potion, which was an infusion of five plants, including datura and aconite. In 1857 some Dutch physicians founded a medical school at Yedo the direction of which was taken over by the Government in 1860. This was the origin of the University of Tokyo. The present period, which goes by the name of Meji, began in 1868. The English doctor Willis, who had played a part in the revolution of 1868, was appointed Professor of Medicine in the Academy of Yedo and Director of the Hospital. Afterwards several professors were invited from Germany. The modern development of scientific medicine in Japan is too well known to require repetition.

The second number (July) of *Bedrock* contains several valuable articles. Among them may be mentioned House Flies, by Dr. G. S. Graham-Smith; Inheritance and Reproduction, by Dr. Archdall Reid; a Note on Legislation for the Control of the Feeble-Minded, by Sir Bryan Donkin; and Psychical Researchers and the Will to Believe, by Dr. Ivor Ll. Tuckett. According to Dr. Tuckett, the will to believe is the solution of the "telepathic puzzle." This, he says, has made men like Sir W. F. Barrett and Sir Oliver Lodge "ready to accept evidence obtained under conditions which they would recognize to be unsound if they had been trained in experimental psychology." Dr. Tuckett goes on to make the following interesting statement:

> Professor Sidgwick himself, before he died, appears to have been thoroughly disillusioned about the conclusiveness of the evidence for telepathy. . . . For one day he said to Professor Alexander Macalister (whose authority I have for reproducing the gist of the conversation) that he believed the chief work of the Society for Psychical Research had been the exposure of impostors, and that their best results were mainly negative.

There is, of course, a "will to believe," as we have often said in speaking of alleged signs and wonders. But it should not be forgotten that there is also a will not to believe, against which the scientific mind has to be at least as much on its guard.

The first part of Mr. G. C. Peachey's very interesting *History of St. George's Hospital* (London: John Bale, Sons, and Danielsson, Limited) was reviewed in the JOURNAL of July 16th, 1910. The second part begins with a description of London as it was about the middle of the eighteenth century. He quotes a pseudonymous writer, "Don Manoel Gonzales," who, speaking of doctors, says English physicians seldom get their bread till they have no teeth to eat with. "Those who are eminent among them will not get up at night or at any or every call; but the great grievance against them is the exorbitance of their fees, and the fact that if a physician has been called in, he has continued, though the patient is unable to bear the expense, for no apothecary can administer medicine to a patient who has already been prescribed for by a physician. They scorn any fee but gold, and the surgeons are still more unreasonable, which accounts for the employment of quacks who are cheap and easily obtained." The early history of St. George's Hospital is told in detail, the narrative being based throughout on original authorities. A drawing by Isaac Ware of the hospital as it was in 1736 is reproduced as a frontispiece.

British Medical Journal.

SATURDAY, JULY 27th, 1912.

THE RACIAL RESPONSIBILITY OF MEDICINE.

Among the privileges enjoyed by members attending the annual meeting at Liverpool to whom Sir James Barr in his presidential address extended a cordial welcome, not the least was that of listening to his suggestive discourse. It was a happy thought to employ the occasion in a review of the general relation of the medical profession to society, and the bearing of the evolutionary conception upon the duties and functions of the medical calling. Not only is the subject one whose present discussion may be considered in a special sense timely, and even indispensable; it is one also in which Sir James Barr has long displayed an active interest, and in dealing with which he finds full scope for the boldness of his thought and the trenchancy of his criticism. He is no *laudator temporis acti;* he sees clearly and says plainly that, alike in things medical and in the world at large, the old order is rapidly changing and in great measure passing away, to give place to a new, and, as we must hope and believe, better order. Taking as his text the question proposed by Henri Bergson as to the human race—"What are we? What are we doing here? Whence do we come, and whither do we go?"—he applies it to that numerically but not intrinsically insignificant fraction of the race of which he is himself a distinguished representative. Granted that, to the vast majority of the thinking public, our existence and utility need no justification, he invites us to join him in looking more deeply into the matter, and in considering what changes may be called for in the spirit and method of our work, in order to render it in the greatest possible degree advantageous to the higher evolution of mankind.

The flippant objection against the medical profession heard once or twice recently, that it subsists by the misery of others, hardly deserves the obvious reply that it is by the alleviation and not by the creation of misery that it subsists. Not only so, but it is to the efforts of our profession that society owes the practical abolition of many of those diseases formerly so prevalent and so fatal, of which typhus, enteric fever, and small-pox are familiar examples. Yet the question has to be faced whether the great and increasing success of curative and preventive medicine has been the unmixed blessing which at first sight it appears to be. By mitigating in various ways the severity of that environmental ordeal to which in ruder ages all members of the race were subjected, we have partially suspended the operation of Nature's method of eliminating the unfit. We have made possible the survival and, what is worse, the multiplication of biologically undesirable types. And, unconsciously yet inevitably, we have done this by subordinating the interests of the race as a whole to our tenderness for the individual.

It has been objected that biological fitness is not necessarily identical with human fitness; and that the assumption that they coincide is an unwarrantable concession to materialism. Sir James Barr has not overlooked this distinction; but, while expressing sympathy with such forms of speculation as postulate the independence of life and consciousness of their physical vehicles, he wisely insists that in dealing with the stern realities of existence the practical inseparability of life and organized matter must at present be assumed. Life, as we know it, is for us, as it was for Huxley, inseparably connected with protoplasm; the problem of rendering possible the highest development of the individual is mainly that of safeguarding the health and purity of the germ plasm from which that development begins.

If, then, as appears undeniable, the development of the art and science of medicine, preventive as well as curative, has brought the profession to some extent into antagonism with racial interests, previously guaranteed by the elimination of the unfit through natural selection, how is the necessary readjustment to be brought about? In Sir James Barr's opinion, by frank admission of the need of a new racial morality, and the consequent responsibility of medicine for the interests of the race, as well as, and in precedence of, those of the individual; for the interests of the unborn, as well as for those of the living. In other words, by a serious attempt to replace by a selective birth-rate that selective death-rate which has been by our aid so largely diminished. Granted that Nature's method was too crude and barbarous, and that its revival is out of the question, the object secured thereby, that the race should not be carried on by its least worthy members, must in some way be attained. Without mitigating our zeal for the prevention of disease by improved sanitation, or for its cure by improved methods of treatment, we are urged to realize that, from the point of view of evolution, these are, after all, secondary matters. Sir James Barr would have us "raise the banner of health with all the fervour of a new religion"—that new religion of eugenics of which the late Sir Francis Galton was a pioneer and an apostle. This imposes upon us the duty of giving serious consideration to the means by which it may be secured that the race shall be renewed from the physically and mentally fit, and not from the weaklings and degenerates. It involves the study and inculcation of the laws of heredity with a view to the full realization by prospective parents of the immense responsibility they incur in bringing children into the world. It involves, on its negative side, a duty of self-restraint upon the part of those who are made aware of their unfitness for such responsibility; and, upon its positive side, the desirability of "breeding for intelligence."

We may agree with the President that universal recognition of and conformity with the requirements consequent upon our knowledge of heredity, even in its present imperfect state, might enable us in a very few generations to "produce a pure, moral, highly intellectual, and healthy race"—a consummation, beyond all manner of doubt, in the highest degree desirable. But how is such universal conformity, or anything remotely approaching thereto, to be brought about? With regard to this very difficult question Sir James Barr maintains a wise reticence; obviously the time for a complete and authoritative reply is not yet. That the time is ripe for dealing with mental weaklings few medical readers will, however, be disposed to deny. Sir James Barr, if we understand him aright, is inclined, so far as the requirements of negative eugenics affect responsible individuals, to rely for their enforcement rather

upon moral suasion and intellectual enlightenment than upon State compulsion—a predilection in which we believe the vast majority of medical men and biologists will heartily concur. The problems of connubial ethics are too delicate and complex to be entrusted to the tender mercies of the present-day legislator, even if adequate solutions were in all cases available, which is far from being the case. There can, however, be no doubt as to the desirability of our qualifying ourselves in all possible ways to assist those who, let us hope with increasing frequency, will seek our advice as to their eligibility for parentage, as well as to take a leading part in impressing upon the public mind and conscience the racial significance of the eugenic point of view.

Sir James Barr is of opinion that the medical practice of the near future will in increasing degree be based upon physiology rather than pathology, and will direct its energies largely to the fortification of the resisting power of the individual to the insidious attacks of disease. In this connexion he pays a well-merited tribute to the work of Sir Almroth Wright. The possibilities of artificial immunization are a tempting sphere for speculation and experiment: for example, it does not seem unduly optimistic to share the President's belief that upon these lines an end might, by determined effort, be made to the ravages of venereal disease.

While applauding the altruistic tendencies of the age as manifested in the care bestowed upon mental and physical weaklings, he sounded a note of warning with regard to the danger of an undue subordination to their welfare of that of the intelligent and the strong. It is time to consider the necessity of limiting the pecuniary and other burdens that, in the interests of the wastrel and the unemployable, are being heaped upon the competent wage-earner and the hard-worked professional man. Similarly, in regard to education, Sir James boldly protests against the fallacy, which seems to underlie much current talk, of assuming that all brains are, in capacity for education, approximately equal, and the vast sums of money wasted in the attempt to make scholars of those in whom the necessary endowment is lacking. Granted that the potentiality of high culture should be zealously sought out and encouraged, it is the height of absurdity to ignore the fact that it is a rare quality.

In concluding an address remarkable for its wealth of ideas and vigour of expression, the President emphasized the need, for success in preventive medicine, of a clear comprehension of physiology, illustrating his point by the indispensability of free calcium ions to the functional efficiency of the cardiac muscle, and the dependence of the health of the heart upon the average level of the arterial blood pressure.

THE ADDRESS IN SURGERY.

MR. PAUL was well inspired when he decided to devote the Address in Surgery to some of his personal experiences of the surgery of the large bowel. During the past few years this region has had a moderately large share of attention from surgeons whose enterprise and ingenuity and courage have yielded results perhaps not so apparently brilliant as those in gastric surgery, but quite as effective in the attainment of the great object—prolonging of life—or at least promotion of the patient's comfort and the relief of suffering. More than twenty years ago Mr. Paul became known as an earnest and original worker in this portion of the field of surgery. During these years these qualities have been tested and worked to the uttermost, and, therefore, now we have the inestimable benefit of the mature ripe judgement and personal experience of one who has had manifold opportunities and possesses the gift of making fullest possible use of these opportunities.

At the outset the scope of the address was restricted to consideration of malignant disease of the great intestine, and especially to those cases calling for the operations of colotomy, short-circuiting, colectomy, excision of rectum. Cancer of the bowel requires to be considered from two points of view — the mechanical and the pathological. It is so frequently the case that the first indications of an abnormal state of the bowel are symptoms of mechanical obstruction, and the obstruction calls urgently for treatment before a cure of the malignant growth can be attempted. After the obstruction has been relieved, the whole question of the radical treatment of the underlying malignancy and its accompanying pathological problems has to be attacked. The success of the attack will depend upon the thoroughness of the investigation into the patient's general constitutional state, the variety and situation of the cancer. Three chief kinds of cancer are recognized—the large, soft, fungating "encephaloid" type; the small, hard "scirrhous" type; and the infiltrating "colloid" type. These types present different degrees of malignancy, and they follow different paths of evolution. It is well to clear the mind of certain misconceptions regarding cancer. These terms "scirrhous" and "encephaloid" are nothing more than convenient clinical terms which can be used in describing cancers anywhere irrespective of histological structure. It would appear also that relative malignancy is a source of confusion. For we are told that the colloid form is the most malignant; the scirrhous or ring tumour comes next; and least malignant of all is the fungating or encephaloid form. The first two types readily give rise to distant glandular infection and metastasis; the last presents glandular involvement also, but chiefly from septic absorption, and so results of operation in the last class may be quite satisfactory even though glands are not all removed. Cancers of the up-growing type, to which the encephaloid belongs, are soft columnar-celled, composed of cells of high development, and evidently functional. These degenerate slowly, forming bulky growths, and show little tendency to disseminate. Cancers of the down-growing type, to which the colloid and scirrhous varieties belong, possess marked infiltrating qualities and ready infection of lymphatic glands. The ring stricture is a scirrhous cancer; it is not rapidly malignant, but its grip is slow and sure, and recurrence is the rule after excision. Recognition of cancer of the bowel is, unfortunately, as difficult a business as it ever was, and is still dependent upon clinical evidences only. In many cases, the ring tumour especially, the first symptoms are those of obstruction; in some, particularly those low in the rectum, the presence of blood and mucus will arouse suspicion; in others, large ulcers without marked obstruction will be characterized by intestinal toxaemia, loss of flesh, irregular colic.

The proper treatment of any case of suspected or proved cancer of the bowel will tax all the powers and drain all the experience of the surgeon. To the operation of colotomy Mr. Paul gives easily the first place as the operation of widest application and greatest usefulness. In all cases of obstruction of the large bowel, whether diagnosed by exploration or otherwise, strangulation being absent, he advises colotomy in the first instance in preference to an

internal operation. It is immensely less dangerous, and it lessens the risks of a radical operation when undertaken at a later period after a suitable interval. It is true that colotomy as a temporary operation may mean prolongation of the illness, and may be the first of two or three operations; but if removing the obstruction and the whole cause of the obstruction in one operation be so often fatal, there can be no doubt which of the two methods patients would prefer if theirs was the decision. As a temporary measure, Mr. Paul strongly advocates the right lumbar operation. His arguments in its favour are sufficiently sound, and his experience sufficiently extensive to demand careful consideration by surgeons. The only other situation where colotomy is to be seriously considered is the left iliac; this is the operation of choice if the opening in the bowel is to be permanent. It was in 1890 that Mr. Paul recommended the glass intestinal drainage tube associated with his name as an adjunct to iliac colotomy, and for many years he employed it frequently. Fifteen years ago about 85 per cent. of his colotomies were anterior, but since then he has made more and more use of the right lumbar operation. It is a common thing to hear doctors and nurses say that they would not submit themselves nor ask any friend to submit to a colotomy with its obnoxiousness and misery and social isolation. Mr. Paul has no sympathy with that kind of talk. He thinks the disability resulting from an iliac colotomy is not nearly so great as is assumed. With a little pluck and the desire to make the best of a bad business, any ordinary patient can continue to lead a useful life. He is a weak-spirited individual who sinks under the misfortune of such a personal discomfort. In Mr. Paul's statistics, drawn from private practice only (hospital patients are notoriously difficult to trace), there are some remarkable figures to show the length of life after colotomy for cancer of the bowel; ten patients were alive at varying intervals from eight months to ten years.

When a reasonable period has elapsed after the primary relief of obstruction by colotomy, further treatment of the disease has to be considered. Short-circuiting may be of great benefit, and may permit the enjoyment of a comparative degree of comfort by relief of the obstructive symptoms. It is essential that this operation shall not be performed when there is paresis of the bowel, and it is also important that as small a section of bowel as possible be cut out of the circuit. But, however good the results of colotomy or short-circuiting may be, the excision of a malignant tumour should be the ideal. The most frequent situations for malignant tumours of the great intestine are the caecum and sigmoid, and these are the most satisfactory to deal with by operation. Mr. Paul's experience has taught him no better method of removing the caecum than that suggested by him in 1892, when the operation was done in two or even three stages. Possibly in the future better methods will be invented so that one operation may suffice; but so far he has had a very low mortality in this method, and failure only came when immediate union of the cut ends of the bowel was attempted.

In excision of the rectum there are some points of capital importance. A preliminary colotomy greatly lessens the risks of total resection; it should be done in all the more serious cases, and wherever the double route operation is to be performed. The value of retaining any portion of the healthy bowel situated below the disease is seriously questioned, the transposition of the exit of the bowel to a new situation beside the sacrum giving a much more efficient result. Then prolapse is obviated when no bone is sacrificed.

Progress in the surgery of the large bowel during the past quarter of a century may not have been characterized by startling meteoric flights, but it has gone on by a steady march. It is a remarkable tribute to the acumen of surgeons of the early days of colotomy that that operation is elevated to the position of a sound therapeutic measure, and is no longer to be regarded as a confession of failure, an operation of apology. Plainly, much remains to be done; the early recognition of cancer, apart from clinical evidences; the explanation of apparent spontaneous cures; the location of certain kinds of cancer in certain portions of the bowel; the mode of spread of the disease; the readiness or otherwise of metastasis—these and many others are problems awaiting solution. We may not always see the progress that is made, but assuredly we cannot but feel that work of the quality recorded in the address must bring the solutions nearer.

MEDICAL AND SANATORIUM BENEFITS.

The Annual Representative Meeting, which brought its five days' session in Liverpool to an end on Wednesday, arrived at two decisions of outstanding importance. It expressed its regret that the Government had not acceded to the terms upon which alone the cordial co-operation of the medical profession in supplying medical treatment under the Insurance Act can be obtained, and unhesitatingly adhered to the minimum demands as formulated in the letter addressed to the Insurance Commissioners on February 29th, and since elaborated in interviews with the Chancellor of the Exchequer. It consented to undertake the work of sanatorium benefit subject to safeguards and conditions which are fully set out in the report of the proceedings published in the Supplement.

We are quite well aware that the decision as to sanatorium benefit will not be received with unmixed satisfaction by the profession—that indeed it will alarm and anger many. There was ample evidence within the meeting itself that any proposal to give medical services in any form in respect of any part of the Act before the demands of the profession with regard to medical benefit are conceded is extremely distasteful to very many members of the profession. We are quite aware also that some newspapers have in various keys trumpeted the decision abroad as evidence that the profession is weakening in its opposition to the inept system for the administration of medical benefit contained in the insurance scheme which the Government is endeavouring to force upon an unwilling public and a hostile profession. But this conclusion should not be accepted without very full consideration, and when such is given we believe that most level-headed men will realize that the Representative Meeting came to a wise decision.

The Association adheres to the minimum demands forwarded to the Commissioners after the Special Representative Meeting in February. At that time sanatorium benefit was not so prominent; the scheme for its administration, outlined in the Astor report, had not been drafted—it was not until May that the Local Government Board, which is mainly responsible for its administration, issued its preliminary warning—and in February it was still possible to hope that Mr. Lloyd George would not endeavour to snatch a tactical political advantage by bringing technically into force at the earliest possible moment a scheme at present existing, in an inchoate state, only on paper.

The Representative Meeting, after, as has been

said, and as any member may see for himself by referring to the SUPPLEMENT, long and anxious debate, decided that it would be more consonant with the honour and interests and traditions of the profession to consent to work the scheme for the treatment of tuberculosis, to be administered by the county councils in co-operation with the County Insurance Committees, than to refuse to do so in order to win some doubtful advantage of tactical position.

The profession refuses to work the scheme for medical benefit under the Act because it knows it to be unsound in principle, defective in detail, and inimical to the public interest, while at the same time it is sought to impose upon the profession onerous and exacting duties, and to pay sweating terms of remuneration.

The scheme for the treatment of tuberculosis is on a different footing. The public demand for an organized system of preventing and treating tuberculosis has been created by the profession itself, and the majority of the Representatives felt that the profession ought not to put any obstacle in the way of its being efficiently worked from the start. In this connexion, the fact that the scheme has already technically been brought into operation had weight, The conditions of service and the terms of remuneration are not, so far as can be judged, so much below those which the profession would consider suitable as to justify it in refusing to work it on this ground alone. The Representative Meeting, therefore, felt that it was undesirable to allow what may be converted into a good system to fail on account of the withdrawal of the assistance which the profession can alone give, and which, but for the mistakes of politicians and the unsympathetic attitude assumed by the Insurance Commissioners, it would joyfully have given.

It seems to many that the determination to force on public attention this paper system of sanatorium benefit was a political trick designed to put the profession in the wrong. There has been about some of Mr. Lloyd George's recent utterances a tone which has given the impression that he is seeking to force the profession into taking the aggressive against the tuberculosis scheme, with the object of winning for himself the popular sympathy the profession has hitherto enjoyed. A decision to refuse to work the tuberculosis scheme in order to demonstrate against the Insurance Act would from this point of view have been only to play into his hands, and have given him more ammunition for his rhetorical attacks upon the humanity of the medical practitioners.

ANNUAL MEETING NOTES.

PROLEGOMENA.

THERE are both advantages and disadvantages in holding an annual meeting in a great and habitually busy centre of population, and commonly the latter outweigh the former. But at Liverpool the Executive Committee of the Association's hosts have contrived practically to eliminate disadvantages and to accentuate advantages. The general reception room is at St. George's Hall, a kind of Lancastrian Rome to which all roads lead, and since in Liverpool most of these roads are provided with tram lines, access to the general reception room is especially easy. Furthermore, most of the hotels recommended to the notice of members attending the meeting are within a few hundred yards of this same centre, while the lodgings similarly recommended are for the most part almost equally happily chosen in point of affording ready access to the University buildings in which the Sections are meeting. This year, too, the arrangements here secured continuity of the proceedings from first to last. In many previous years the first general meeting was held on a day when it could hardly be attended by others than the elected Representatives of the Association and its honorary officials, because ordinary members had not yet arrived. This year, however, as at Birmingham, the early deliberations of the Representatives were not interrupted by any formality in the way of an annual general meeting, and ordinary members made their first formal bow to their hosts on Tuesday afternoon. The events which then took place are duly recorded in the SUPPLEMENT to this issue. Meantime, however, the Association as a body had been doubly welcomed, first by Sir James Barr, who visited the Representative Meeting on Friday, and bade the Association welcome in the name of the Branch; next by Sir George Petrie, who on Saturday performed the same task on behalf of the Earl of Derby and the Corporation of the City of Liverpool. The welcome accorded by the weather was less frankly cordial. On Sunday and Monday, indeed, there was almost positive evidence that its clerk must be under the direct influence of Mr. Lloyd George. In any case it rained very heavily on those days, and has since done so at intervals. Other minor representatives of Liverpool have, however, fully re-established the balance. The local policeman, for instance, is proving himself almost as encyclopaedic and ready-witted as his London *confrère*, while the ways of the local tramway man have suggested that his studies in the school of Sir Charles Grandison must have been profounder than those of like employees of the London County Council.

OVERSEA DELEGATES.

FOLLOWING the presentation of the foreign and other guests of the Association to the President on Tuesday evening came the introduction of delegates and members of the Oversea Branches. The names of those Branches brought vividly to mind the fact that members of the Association are now to be found in organized groups in practically every part of the world, while the number of delegates amply proved that these meetings are not less attractive to members in distant lands than to those at home. South Africa, for instance, sent eleven delegates, in the persons of Dr. Bush of the Border Branch, Drs. Charles and Jasper Anderson of the Cape of Good Hope Branch, Drs. T. D. Greenlees, F. Hazell, and M. Hewat of the same Branch, Dr. H. Symonds of Griqualand West, and Drs. Beamann, Hunter, Mursell, and Napier, all of whom practise in the Transvaal. Australasia was even more amply represented, since the list included Drs. J. S. Elliot, David Ewart, and A. E. Palmer, from New Zealand; Drs. F. Antill Pockley and William Chisholm, from New South Wales; Dr. A. Stewart, from Brisbane; Drs. R. H. Marten and C. E. Todd, from South Australia; Professor H. B. Allen and Dr. C. G. D. Morier, from Victoria; Drs. H. T. Kelsall and G. D. G. Thorp from West Australia; and Drs. Leslie Latham and Gregory Sprott from Tasmania. The Indian Empire and the countries in its immediate vicinity were also represented: Bombay by Major S. C. Evans, Burma by Captains H. H. G. Knapp, A. Whitmore, and H. A. Williams, all of the Indian Medical Service; Madras by Surgeon-General P. H. Benson and Major W. C. Long, who also belong to the same service; and the Malay States, including the Crown Colonies ranged round Singapore, by Drs. James Kirk and W. R. C. Middleton; and Ceylon by Drs. Aldo Castellani and A. J. Chalmers. Representatives of the Far East were also not lacking, Hong Kong sending Dr. J. M. Atkinson, its chief medical officer, and China Drs. J. H. Sanders, F. O. Stedman, and Keyt. There were also delegates from the opposite hemisphere, Canada being well represented by Professor Irvine Cameron of Toronto and Professor H. S. Birkett of Montreal; while the West Indies figured in connexion with

the names of Dr. F. Law of British Guiana and Dr. E. E. Bronstorph of Jamaica.

FOREIGN GUESTS.

THE long-established and very popular ceremony of publicly introducing to the President the guests of the Association was performed on Tuesday evening just before Sir James Barr delivered his address. The list of those selected was long, the foreign guests alone numbering between twenty and thirty. Although rather fewer of them than usual were men whose names are familiar as household words to the profession at large, it is at least certain that a greater proportion of them are better known than would be the case if a corresponding number of British specialists were attending a similar meeting abroad. This is because in Great Britain and Ireland no prophet is without honour whatever the country in which he happens to work, and the rank and file of general practitioners are much more familiar with the progress of science abroad and with the names of those who form its vanguard than are men similarly occupied on the Continent. It is a fact in which we take some pride, since, as we have before had occasion to claim, it is in large measure due to the contents of our own columns, including the EPITOME OF CURRENT MEDICAL LITERATURE, which is garnered from all sources. Among them were Professors Blanchard and de Beurmann of Paris; Drs. Hajek and Kahler, both members of the staff of the University of Vienna; Dr. Snellen of Utrecht; Professor Strauss of Amsterdam; Dr. Haenisch, the Hamburg electro-therapeutic specialist; Dr. Harold Seidelin of Mexico; Professor Gabbi of Tripoli; Professor F. Kleine, the well-known worker on sleeping sickness in German East Africa; and Drs. Casey A. Wood and W. Ballinger, both of Chicago. Another guest whose name was duly announced was Professor Rutherford, F.R.S., of Manchester, who had been invited to attend the meeting and open the work of the Section of Electro-Therapeutics by an address on The Chemical Action of Radium.

THE CHURCH SERVICES.

THE holding of the special services which habitually form part of the proceedings at the Annual Meeting was deferred until a later date than usual, Wednesday being the day selected. Considering that by this time the meeting was in full progress, and the Catholic service was held at the uncomfortably early hour of nine o'clock in the morning, and that the service in the English Church took place at an hour when many visitors were bent on pure amusement, both may be considered to have been well attended.

The Anglican Church service took place at 2.30 p.m. on Wednesday, the sermon being preached by the Right Reverend the Lord Bishop of Liverpool (Dr. Chavasse), who took as his text Acts x 38: "God anointed Jesus of Nazareth with the Holy Ghost and with power: Who went about doing good, and healing all that were oppressed of the devil, for God was with Him." Reared in a medical home, taught from a child to reverence the very name of doctor, knit by the closest ties of relationship with three generations of medical men, he might claim (said Dr. Chavasse) at least to be in full sympathy with his audience, and to have watched with peculiar interest and wonder, at close quarters, the amazing progress of medical science and surgery during the last half-century. Two of the outstanding features of the revolution that it constituted seemed to him to be: First, the noble spirit of altruism which had led every medical discoverer and inventor to be regardless of his own self-enrichment, and to place freely the result of long years of laborious research or of a moment's inspiration at the service of mankind. And, secondly, the scientific spirit which had killed the conservatism of an older time, and had led the foremost men of medicine to cultivate an openness of mind which recognized the extraordinary complexity of man. Some years ago the medical world, like every department of scientific thought, felt the effect of the advancing wave of materialism which so largely influenced intellectual Europe. That wave, thank God, seemed now to have spent its force and to be on the ebb. To-day the dictum of a great surgeon that "he had never found a soul in the dissecting-room" would no longer be regarded as scientific, or as affording even a shadow of evidence that the soul did not exist. Phenomena, until lately little thought of, had tended to strengthen the teaching of the Christian revelation on such points as the immortality of the soul, and to change hostility into agnosticism or into a sympathy ready to pass into faith. So, too, a fact never wholly lost sight of but too often forgotten, not only by science but by religion, had of late years come again to its own. This was the influence of the mind and spirit over the body. Both religion and science were facing to-day the question of faith-healing, and the existence of that fantastic and amazing cult which called itself Christian Science, but which was "a medley of bad philosophy, confused Christianity, and an ecstatic optimism which cures all evil by denying its existence." Like every heresy which had succeeded in captivating the minds and hearts of good and credulous men and women, Christian Science contained a grain of truth, this being the fact that, given certain conditions, the mind and the spirit could operate on the body with remarkable physical results. But this was no new fact. Ancient and modern history alike bore witness to the curative influence of the mind over the body; and one great task lying before medical science to-day was to investigate the range of this power and the conditions under which it worked. The result of such an inquiry would be pregnant with peculiar blessings to suffering humanity, and regulate and redeem from superstition, imposture, and grievous abuse, one of God's great instruments for the healing of man. This influence of mind over body helped to explain many of the miracles of our Lord, in whom was found in the highest degree and in the most perfect form that commanding personality and those special gifts which had existed in a much lower degree in certain men and women in every age, sometimes by virtue of their spiritual union with God and sometimes by natural endowment. It suggested, too, what every true doctor had known in every age, though he had not always carried the knowledge into practice—namely, that in certain diseases as much attention must be given to the mind and spirit as to the body. The wise application of the physician's knowledge of the influence of the mind on the body was often a necessary condition of successful treatment in the case of certain patients. It reinforced the curative powers of Nature, and it helped sufferers to work out their own deliverances. Speaking on the relations of doctors and clerics, the Bishop said medicine and religion were mutually complementary. I voice, I am sure (he said), the opinion of the vast number of the English clergy when I say that a clergyman cannot be allowed, without danger to the community, to take upon himself pure medical functions. By so doing he travels far outside his authorized commission; he excites the well-deserved resentment and censure of members of the medical profession, and he exposes to the gravest risks the health, and even the life, of those whom he dares to treat. He has his part—and no mean part—in the healing of the sick. He can second by every means in his power the counsels of the doctor. He can support him loyally with his patient, and strengthen that patient's faith in his doctor's person and treatment. In many cases he can do more. Since the mind and spirit affect the body, since hope, and faith, and calmness are powerful factors in a patient's recovery, he can prove a real help in preparing a sick man for a serious operation; in strengthening the will of one who is hovering between life and death, and whose

recovery may hang, to a very great degree, upon his own courage and resolution; and in soothing and upholding by his ministry the spirits of those whose life may depend upon the patience and the strength which comes in its highest form from the vision of the presence of God. The saying of Gassner, of whose power as a faith healer in the middle of the eighteenth century there can be no question, explains his success: "One ought not to acquiesce in pain, but bravely to resist it in faith." The priest of the body should welcome the advent of the priest of the soul as that of an ally, and the priest of the soul should work with loyalty and discrimination with the priest of the body. Each has his function, and together they can accomplish a better and more complete work than if each serves the sick alone. Our Lord Himself was the priest of the body and of the soul. Before concluding, Dr. Chavasse spoke with admiration and thankfulness of the magnificent work now being done by medical missionaries, mentioning more particularly in this connexion the late Theodore Leighton Pennell, who died this year in India after nineteen years' work on the Afghan frontier, and Arthur Jackson, who died at Mukden last year while tending on a plague-stricken people.

The Catholic service was held in the Pro-Cathedral Church of St. Nicholas, Coppers Hill, Mass being celebrated by the Catholic Archbishop of Liverpool, Dr. Thomas Whiteside. The preacher was the Rev. H. Lucas, S.J., who took for his text the words (Mark ix, 43–45), "If thy hand scandalize thee, cut it off," etc. This, he observed, was an unquestionably hard and uncompromising saying, even though expressed in figurative language, but he had chosen it because it gave emphatic expression to a truth which it was most important that all Christians should bear in mind—namely, that pain was not an absolute evil to be shunned at all cost, nor conversely was physical well-being and the absence of pain the chief aim and end of a well-ordered human life. It was part of practical wisdom to recognize man's limitations, and members of the medical profession, who were constantly engaged in a great and laudable work of mercy, would be well advised always to bear in mind that the claims of the immortal soul were of an immeasurably higher order than those of the perishable body. In the recognition of those claims lay, the preacher said, the chief difference between "mere philanthropy" (that is philanthropy divorced from religion) and true Christian charity. The outlook of philanthropy was bounded by the confines of the visible world and of this transient life. But Christian charity, even when engaged in what were called the corporeal works of mercy, could never lose sight of the soul and of its eternal destiny. Christian charity, he continued, sees in pain and ill-health not only no absolute evil, but often a blessing in disguise, and not seldom a blessing of which the guise is extremely thin, inasmuch as the severe castigation of sickness and suffering not infrequently appears to be just the one thing needed to turn the heart to God, and to save the sinner from a far worse fate than that of a few weeks or months or even years of pain. Nor did it therefore follow that to battle against disease was futile and to no purpose. That man should endeavour to do so was plainly in accordance with God's will and quite unmistakably indicated. For, indeed, that softening of the heart which was needed in order that physical ills might become an occasion of spiritual blessings in great measure depended on the efforts made to relieve the sufferer, or at least to lighten the burden that must needs be borne. Father Lucas then briefly touched on the theme that "philanthropy" divorced from religion tended to the exaltation of the community or of the State at the expense of the individual, and of the physically and mentally "fit" at the expense of the so-called "unfit." Finally, a hope was expressed that, in the not too distant future, the city of Liverpool might see, rising in its midst or on its outskirts, a great Catholic hospital in which the consolations of religion and the ministry of the Catholic priesthood and of a Catholic sisterhood might be exercised under more favourable conditions than those of necessity prevailing when the surroundings were predominantly non-Catholic. In such an institution everything possible could be done to inspire the very wreckage and wastage of humanity with the hope that, though they had been found unfit for the struggles of life in an inhospitable world, they might yet be rendered fit for the kingdom of heaven. The address concluded with an appeal on behalf of the Medical Benevolent Fund.

The Representatives.

THERE is general agreement that at this meeting, as on sundry previous occasions, the elected of the people, or, in other words, the Representatives of the Association, have thoroughly justified their existence. They have awarded themselves some ten hours' penal servitude on each of four separate days, and have exhibited laudable patience in listening to inevitable repetition of argument, and an even more admirable capacity for appreciating fine distinctions. It is satisfactory, therefore, to be able to report that their labours from Friday to Wednesday were not entirely unlightened. Their brief tea-parties in the afternoons have been very cheerful and animated events, and the completion of their first day's work was celebrated by their dining together at the Adelphi Hotel. On Sunday there was to have been a formal excursion, but the weather, as elsewhere indicated, was not inviting, and they broke up into various parties. Some made hurried dashes homewards, others engaged in golf, and a good many went by sea on the chance of catching a glimpse of the beauties of the Menai Straits. It is whispered that one outcome of these various relaxations is that the Representatives have discovered a teller of tales whom they are prepared to back for a considerable stake against any American champion of the same art, and that he hails from Birmingham.

The Presidential Badge.

IT will be remembered that on the occasion of the annual meeting in London in 1910 the Metropolitan Counties Branch presented the Association with a presidential badge, and that last year at Birmingham a replica of this was presented to Professor Saundby. A corresponding gift was made this year to Sir James Barr just before he delivered his address. In making the presentation Mr. Thelwall Thomas said that it was intended as a token of regard for Sir James, and of appreciation of the remarkable energy he had displayed as President-elect. Sir James had been their President for half a dozen hours only, but, judging by the headlines which had already appeared in the evening papers, he was likely to make a sensation in his year of office. The medical profession had a very troublous year in front of it, but they felt they had in Sir James a particularly strong man at this time of crisis. Mr. Thomas added, amidst laughter and applause, that although he was presenting Sir James Barr with the replica, he did not intend to hand it over to him. He preferred to deliver it to Lady Barr, and to ask her to wear it as a jewel during Sir James's presidency.

Social Doings.

ANY one who manages to take even moderate advantage of the opportunities set before the visitors by the Entertainments Committee should be able to give a comprehensive account of Liverpool, alike from a social point of view and in respect of its attainments as a great port and manufacturing centre. The amount of amusement—including social entertainments, informative occupations, and physical recreations—which commenced on Tuesday, and is still in full swing, is almost bewildering in its variety. To deal with the social side alone, Wednesday saw a garden

party given by the President of the Medical Institute and Mrs. Robert Jones, of Druid's Cross, Wavertree, and on the same evening the general hosts gave a soirée, at which refined equivalents for the Pickwickian boiled leg of mutton and onion sauce were by no means lacking. On Thursday Mr. and Mrs. Frank Paul were at home in the garden of their residence at Hoylake, and Dr. C. C. Street was similarly engaged at Haydock Lodge Private Asylum. Later the same afternoon the Earl and Countess of Derby also gave a garden party at the Botanic Gardens, and a garden party given by Sir James and Lady Barr at Calderstones is still to come. Consideration was on that evening duly paid to probable desire for some means of getting through the hours between dinner and bedtime on the part of members who did not care to attend the Association dinner and of the ladies who were accompanying them. The entertainment provided for them took the form of an admirable performance of *Mrs. Gorringe's Necklace* at the Court Theatre, which was specially opened for the occasion. Meantime and between whiles, thanks to the courtesy of their members, there have been nearly a dozen clubs at which to while away the time and possibly renew one's vigour for further sightseeing by a moment's doze, and golf has been daily very much to the fore.

Ladies.

Arrangements for ladies are working very successfully, a special committee, at whose head is Lady Barr, having provided a variety of occupations for lady visitors only domestically interested in science during the hours that work in the Sections is going on. A certain number of motor cars have been available for short drives in the neighbourhood, most of them taking their passengers to an interesting house known as Speke Hall, whose owner, Miss Watt, has kindly thrown it open on this occasion, while on Friday morning the *Galatea*, a yacht belonging to the Dock Board, is to afford an opportunity of becoming acquainted with the Mersey so far as is possible in the course of a short morning. An equally practical development of the energies of the Ladies' Committee has been the selection of places specially suitable as refreshment rooms for lady visitors from among the remarkable number of places of this order that endeavour to claim the patronage of passers-by that the more central part of the city possesses. Nor has the need for rest been overlooked—writing rooms and other like accommodation being available.

Other Associations.

The Association adhered this year to its practice of according facilities to other closely allied bodies to hold gatherings during the meeting, those which have taken advantage thereof on this occasion being the National Temperance League, the Irish Medical Schools' and Graduates' Association, and the Continental Anglo-American Medical Society. These subsidiary meetings are decidedly popular among attendants at the meetings, and they are certainly of utility to the societies concerned, since other occasions on which any considerable number of actual and possible members find themselves collected in the same town are comparatively rare. The National Temperance League is so very much alive that it seems natural to regard it as a personal entity. This being the case it may probably be rightly described as having attained the position of the oldest inhabitant in respect of annual meetings, since its breakfast party this year is the forty-first annual event of the same order. It took place on Thursday, and we hope to give an account of the occurrences thereat in a later issue. Meantime it need merely be said that the Chairman was Mr. Alexander Guthrie and that the special event of the morning was an address by Dr. Mott. The Irish Medical Schools' and Graduates' Association is now an almost equally constant attendant, and this year fixed its summer general meeting for Wednesday. Having mentioned the adjective "Irish," it need scarcely be said that hospitality formed a feature of the proceedings—so marked a feature, indeed, that it practically concealed the rest of the face. Doubtless, the society managed to get through business of some kind, but for the most of those present the meeting was solely a very cheerful luncheon party at the Exchange Station Hotel, which had been organized by the honorary provincial secretary, Dr. Shepherd Boyd, of Harrogate, and had as chairman Dr. Macnaughton Jones. The third meeting, that held by the Continental Anglo-American Medical Society, was also in the nature of a midday *festa*, which was timed for Thursday on the conclusion of the section work for that day.

The Annual Exhibition.

The Annual Exhibition, which was practically ready for examination as early as 9 o'clock on Tuesday morning, was formally declared open by Sir James Barr at 11.30 on that day, and is now, we trust, receiving an adequate meed of attention on the part of attendants at the meeting. The exhibition covers so wide a field that it serves as a practical illustration of the advertisement pages of our own and all other medical journals. They offer in addition the supreme advantage that one is able to examine at ease, and without fear of importunity to purchase, a carefully selected assortment of everything that is most attractive in the way of new instruments, books, pharmaceutical preparations, surgical appliances, and all other things intended to facilitate medical and surgical work in its various branches. In short, as some one remarked, this exhibition is a mine of new ideas to those who are too much absorbed in the daily cares of practice to have time habitually to study their Journal from end to end. There are many who rightly regard the annual exhibition in this light, and should they have been able to visit that now in progress they will not have been disappointed. In particular they must have been struck by the skill shown by manufacturers in seizing upon every fresh suggestion in the way of treatment and making it promptly available to all those who care to test its merits. They will probably also be disposed to congratulate the officials of the Association responsible for the organization of these exhibitions. It is true that they are now experts in this very special class of undertaking, and it is fortunate that this is the case, for otherwise it would have been impossible for them to transform the only building available in the vicinity of the university into one worthy of its contents. Nothing but its external walls betrayed the fact that only a day or two previously the chief claim of the building to attention had consisted in the fact that it was a very well-marked specimen of an ancient disused warehouse.

Annual Meeting Literature.

The literature which is being handed to members together with their membership card is of an unusually comprehensive character this year, for, apart from copies of the *Daily Journal*, it includes three separate volumes descriptive of Liverpool in one or other of its many guises. One is a freely illustrated publication in pamphlet form dealing with Liverpool as a great port; it is a gift from the Mersey Docks and Harbour Board. A second volume of the same order deals with Liverpool as a specimen of a great city, and traces its rise from early times to its present position. It contains some admirable reproductions of pictures of Liverpool, both as it was in long bygone days and as it appears at the present date; this volume is a gift of the Finance Committee of the Corporation of the city. The third volume may be regarded as the Association's own offspring, its immediate parent being the Handbook Committee formed by Sir James Barr, Mr. Thomas Bickerton, Mr. Charles Larkin, and Mr. Owen T. Williams. An introduction states that its preparation

had to be undertaken and carried through in great haste because the allied volume which it was originally intended to publish, and which was already in the hands of the printer, proved to be unnecessary, owing to the prospective gifts of the two books already mentioned. But we can truthfully say that the haste is most admirably concealed, since the volume is not only well and attractively written, but is well turned out in a neat red cover. Of its many illustrations, two early ones depict a past president of the Association in the person of the late Dr. A. T. H. Waters, and another president who, although he has but recently attained office, must already be familiar both by sight and through his forcible writings to most members of the Association, namely, Sir James Barr. The book itself consists of some six chapters, one tracing the relations of Liverpool with the body which is now its guest, while others deal with Liverpool from the point of view of its medical history and present position in all like connexions. A very attractive chapter on its medical history is from the pen of Mr. Bickerton, while Mr. C. H. Reilly deals succinctly with the University and its medical school. Finally comes an interesting chapter in which Mr. S. T. Adshead reviews town planning in relation to Liverpool, while Mr. J. M. Given adds some considerations on what is, after all, and despite the feats of modern engineers, a leading factor in the whole situation, namely, the geology of the locality.

MESSRS. BURROUGHS WELLCOME AND CO. have distributed to the members present at the Annual Meeting a charmingly got-up booklet on Anglo-Saxon leechcraft. A historical sketch of early English medicine is given, with numerous reproductions of illustrations from Anglo-Saxon manuscripts of the tenth, eleventh, and twelfth centuries. A plan of Liverpool as it was in 1655 makes an effective frontispiece. The book is divided into nine chapters, dealing respectively with the genesis of English medicine, the Anglo-Saxon leech and his practice, Anglo-Saxon medical literature, *Medicinale Anglicum* (or the *Leech Book* of Bald), the *Herbarium* of Apuleius Platonicus, the *Medicina de Quadripedibus* of Sextus Placitus, Anglo-Saxon surgery, Anglo-Saxon pharmacy and herb lore, and Anglo-Saxon methods of healing by charm and incantation. In a prefatory note Mr. Henry S. Wellcome, who, as is well known, has been engaged for many years in researches as to the early methods employed in the healing art among civilized and uncivilized peoples, states that the medico-historical exhibition which he has been organizing for some time past, will be held at the same time as the International Medical Congress in London in 1913. Mr. Wellcome appeals to all who possess objects of historical medical interest to help by lending them so that the exhibition may be thoroughly representative.

THE attendance of members registered up to the time we go to press is 1,400. They are accompanied by 800 ladies.

THE SECTIONS.

BRIEF SUMMARY OF PROCEEDINGS.

THE character and scope of the work of the different Sections will appear from the following short summary of the proceedings. A full report of the discussions and of the various papers read in the Sections will be published in due course.

Wednesday, July 24th, 1912.

SECTION OF ANAESTHETICS.

THE proceedings were opened by the President, Dr. Dudley W. Buxton, who, after welcoming those present, and outlining the matter before the Section, emphasized the importance to anaesthetists of scientific training, and dwelt on the lack of encouragement to the best men to join their ranks, and the disabilities under which many of them laboured. He then called upon Dr. Felix Rood to open a discussion on intravenous infusion anaesthesia. Dr. Rood, after a comparison of the relative safety of chloroform and ether, pointed out the great advances which had taken place in the methods for the administration of ether. The infusion method obviated the necessity of inhaling an irritating vapour, and gave the patient the benefit of a saline infusion as well. He described his apparatus and technique, and quoted a number of cases. He thought the method most valuable where there was pulmonary disease, or shock was present or likely to supervene. Dr. McCardie considered that for operations in and about the mouth ether was best administered by means of Crile's tubes, but in operations on the larynx and on large goitres the intravenous method had advantages. He also considered it useful where haemorrhage or shock were present or anticipated. Mr. Victor Fielden emphasized the difficulties connected with the proper warming of the solution. He asked if any cases of oedema of the lung had supervened upon infusion. He considered the percentage of lung complications quoted by Dr. Rood as occurring after chloroform anaesthesia in foreign clinics were much higher than obtained in this country. Mr. Alexander Wilson regarded it as a disadvantage to have the anaesthetist removed from the region of the head. Dr. Barton's experience of the method had not been an unqualified success, and his cases were therefore limited. Using ether, the type of anaesthesia was no better than that obtained by the open method of inhalation, and after-effects had been worse. Hedonal was a distinctly dangerous anaesthetic; a death had occurred in his practice two hours after operation. In selected cases, and with certain precautions, both anaesthetics would, no doubt, continue to prove of service occasionally. The President said his experience went to show the method was of value; like all new methods it required complete mastery of technique and careful selection of cases; undoubtedly there were special dangers easily avoided by the anaesthetist giving his whole attention to the administration. He considered the statistics of post-chloroform complications quoted by Dr. Rood were vitiated, because the method of administration was not taken into account; by employing a proper method chloroform anaesthesia was produced without chloroform toxaemia. Dr. Rood replied. Mr. Alexander Wilson next opened a discussion on the importance of affording the anaesthetist an opportunity of making a thorough examination of the patient some days previous to operation and after the nature of the operation had been disclosed. He pointed out that the responsibilities of the anaesthetist were now greater than formerly, and that there was a growing tendency to attribute more of the post-operative complications to the effect of the anaesthetic. Many difficulties would be prevented by the more intimate acquaintance of anaesthetist and patient. Mr. Kirkby Thomas agreed with the opener and regretted the apathy of anaesthetists in the matter. Mr. Carter Braine was in sympathy with the proposition; in a quarter of a century's practice he had only been asked to make a previous examination on two or three occasions. He deprecated the administration to patients of drugs previous to operation without consultation with the anaesthetist. Dr. Fingland made some remarks. Mr. Leedham-Green thought the public were only just becoming educated to the necessity for the employment of a skilled anaesthetist and that it would take some time before they realized the importance of a previous consultation with him with its contingent fee. Dr. Mart dealt with the matter from the psychological aspect. Dr. McCardie pleaded for a closer association previous to operation as calculated to reduce the emotional strain on the patient, and quoted from Crile in support of his thesis. The President considered financial considerations of minor importance where such grave responsibilities were involved; whilst fully recognizing that the anaesthetist was only auxiliary to the surgeon, he pointed out that the bulk of these responsibilities fell upon him.

SECTION OF ANATOMY.

IN opening the proceedings in this Section, the President, Professor William Wright, said that they met under the most favourable auspices, in that Sir William Macewen had agreed to open a discussion on that most important subject to anatomists and surgeons—the development and

growth of bone. Sir William, who gave a summary of the important work on which he had been engaged for some years past, discussed particularly the origin of the osteoblast. He believed the osteoblast was derived from a cartilage cell; that cartilage was always present potentially in bone, even when mature; and that when repair took place the development of cartilage preceded the formation of bone. In rickets the projections which occur in long bones, like the tibia, were first of all preformed in cartilage, and subsequently became converted into bone. It was certain, therefore, that old bone could reproduce cartilage; in other words, cartilage was a phase in the reproduction of bone. The speaker then showed a large number of lantern slides illustrating the result of his experiments on the long bones of animals, such as the deer. After removal of a piece of bone in a young animal, there was a rapid filling up of the space by bone, from which it had been argued that the new bone was the result of activity of the periosteum. This was a mistake, and to prove it Sir William removed the whole of a long bone, leaving the periosteum intact, and no reproduction of bone took place. He also gave an account of some interesting experiments which he had made with reference to the growth of bone round rings inserted between the periosteum and the bone. Most textbooks stated that the bone which subsequently grew over the ring came from the periosteum, but the same result was obtained after the periosteum was removed. Professor Geddes, who followed, showed that here, at any rate, deductions from experiments were not in harmony with those obtained from a study of embryos and a consideration of morphological problems. He believed the osteoblast to be *ectodermal* in origin. He first of all emphasized the importance of stains in these observations. Haematoxylin led one wrong. The most useful stains were Bismarck brown, Congo red, Mallory's stain (Sabin); the latter contains fuchsin, and Professor Geddes found that the osteoblast cell stained differently from the cartilage cell—that with Mallory's stain it came out a much brighter red, due to a marked fuchsin-holding capacity which the osteoblastic cell possessed. Taking this fact as a basis, he examined carefully embryos of 10, 9, and 8 micromillimetres in length and found certain migratory cells which he regarded as osteoblasts, and which, proceeding from ectodermal structures, passed through the connective tissue syncytia to the developing periosteum. Thence they passed to reach the potential subperiosteal space, where they congregated in enormous numbers and rapidly proliferated. The rôle of cartilage was to form a scaffolding for the first bone, and as this became strong enough to support itself the cartilage underwent absorption. This scaffolding saved the osteoblasts from the pressure of the surrounding parts. Cartilage was mesodermic; bone was not. What, therefore, was the explanation of Sir William Macewen's contention that bone came from cartilage? There was no difficulty regarding cartilage formation from bone as it came from the connective tissue syncytium of the bone. Professor Paterson, arguing from his observations on the developing sternum, had come to the conclusion that the cause of ossification appeared to be essentially irritation; the agent was an embryonic connective tissue cell, and the process a chemical one, which occurred *in situ*, and was extravascular. Mr. D. Douglas-Crawford said that after frequent observations in hospital he accepted Sir W. Macewen's views on bone growth. After the President had summed up the various points raised in the discussion, Sir William Macewen briefly replied, and the Section adjourned.

Combined Sections of Bacteriology and State Medicine.

An important discussion took place in this session on the means of estimating the suitability of water for drinking purposes. Dr. Chalmers of Glasgow took the chair. Dr. Houston (Metropolitan Water Board, London) showed that typical *B. coli* was present in excremental matter, and might be regarded as indicative of undesirable pollution. He described it as a decadent microbe when outside the animal body, so its presence in water pointed to recent pollution. He found that a standard of pure water could be set up, by condensing samples which showed growth of *B. coli* from 100 c.cm. Impure water could be purified to this standard at a reasonable cost. He laid stress on the importance of not setting up either too severe or too lenient a standard. These standards would be useless if they be not interpreted with discretion, and in relation to local and other conditions, and therefore the verdict of the bacteriological examination should be modified by the results of geographical, topographical, physical, and chemical investigations. The *B. coli* test was the best test for judging the efficiency of any water purification process. It might be regarded as a reliable indication of the presence of possible dangers. Dr. Savage's paper was read by Dr. R. S. Williams, the author being absent. In this communication he stated that *B. coli* was now accepted as an indication of pollution of water. He had set up conditions which a bacterial indicator should fulfil, and examined in detail how far *B. coli* fulfilled them. After discussing the characteristics of coagulating milk, producing indol, fermenting sugars, alcohols, etc., he turned his attention to the atypical variations of the bacillus. The more nearly the organism isolated resembled an excretal typical *B. coli*, the greater was its significance as an indicator of pollution. Dr. Wright (Glasgow) took up the position of the medical officer of health, and in dealing with the value of a bacteriological indicator of water pollution, brought forward statistics in evidence against the assumption of enteric fever being due to contaminated water supplies. He regarded it as being impossible for contamination of a supply in iron pipes with water under high pressure to take place. He also spoke of rural districts with high *B. coli* content in which no enteric fever had existed for many years. Dr. Oliver (Liverpool) challenged both points, and brought forward evidence of the possibility of contamination of water in pipes under pressure. Dr. Willoughby (Eastbourne) asked a few questions. Dr. Stallybrass (Liverpool) raised the question of the dangers of unhygienic housing, apart from water supply, as a cause of enteric, and called attention to the parallelism between pollution of water and incidence of diarrhoea. Drs. Penfold (London), Richard Jones (Festiniog), Ritchie (Edinburgh), and Chalmers (Glasgow) having spoken, and Drs. Houston and Wright having briefly replied, the following resolution was proposed by Dr. Oliver, seconded by Dr. Ritchie, and carried unanimously:

> That this conjoint meeting of the Sections of State Medicine and Bacteriology unanimously desires strongly to urge that no opinion as to the quality of a water for dietetic purposes should be arrived at on bacteriological evidence without a local and topographical inspection of the sources of that supply, made by a competent observer.

Section of Dermatology.

The introductory remarks made by Professor W. G. Smith, President of the Section, dealt with the ways in which dermatology had been enriched by physical science, the discovery of radium being one path, the therapeutic action of the waters of the various spas being another path. Attention was then drawn to the great developments in our knowledge of bio-chemistry—for instance, the proof that had been attained that the factors entering into the immunity problem were of a colloidal nature. Professor Smith looked upon the skin as a greasy colloidal septum, and stated that nothing could be absorbed by the skin which was not of a fatty nature—or, in other words, substances which were only lipoid-soluble. The discussion for the day was on the nature, causation, and treatment of seborrhoea and acne. It was admirably opened by a most lucid paper by Dr. Whitfield, and illustrated by several excellent magic-lantern slides. Seborrhoea was stated to exist without acne, but in every case of acne there was seborrhoea. The word "seborrhoea" was defined "as a secretion which leads to pathological complications." Adolescence was considered the chief cause of seborrhoea. Diet played a large part in producing the excessive secretion, aided by a hot, moist atmosphere and excessive clothing. The production of acne was divided into three stages: (1) The occurrence of seborrhoea; (2) the formation of a horny plug in the mouth of the pilo-sebaceous follicle—the comedo or blackhead; (3) suppuration. In the comedo, which produced no inflammation in the surrounding tissue, Sabouraud's microbacillus was always to be found. Where there was suppuration there was always a marked cellular infiltration in the corium around the comedo, and cultures from

which usually revealed a staphylococcus. Therefore the deduction was drawn that the comedo was due to the microbacillus and the suppuration to the staphylococcus. Brief reference was then made to the treatment of both seborrhoea and acne. Dr. Phineas Abraham was convinced of the rôle played by the constitutional element in the causation of seborrhoea and acne, aided by the bacillary infection. Treatment was fully dealt with, and stress laid on the necessity of always giving some internal medication to overcome the cause of the constitutional defect, be it flatulence or constipation, etc. Diet should be carefully considered, and uncooked fruit or vegetables should be eliminated therefrom. External remedies were necessary, especially sulphur applications, and in all bad cases of acne every pustule should be opened and touched with a needle dipped into camphphenol, and every comedo expressed. Vaccines were regarded as being too much in the experimental stage to warrant a general use thereof. Dr. J. Goodwin Tomkinson agreed to the constitutional rôle played in the production of seborrhoea and acne, assisted by a microbic infection. Local treatment was successful in most cases, provided general treatment was always prescribed. Vaccine treatment was considered unnecessary. Electrolysis in cases in which the sebaceous follicles were extremely patulous—as in rhinophyma—had given excellent results. Dr. R. Sabouraud (whose paper was translated and read by Dr. R. W. McKenna) regarded seborrhoea as a hypersecretion; therefore there was only one variety of seborrhoea—that was, seborrhoea oleosa, and there was no such thing as seborrhoea sicca, and acne was always preceded by seborrhoea. The frequent occurrence of the *Demodex folliculorum* in the comedo played no rôle in the production thereof, but only as a carrier of the microbacillus. Facts had yet to be adduced before the microbacillus could be accused of causing acne. No doubt puberty and some constitutional derangement had a good deal to do with the matter. Pityriasis simplex, or, as it was wrongly named by Hebra, seborrhoea sicca, was probably due to the spore of Malassez (which is a blastomyces), and was not of the same microbic nature as acne and seborrhoea. Sexual activity must play some part in the production of seborrhoea, because of the fact that alopecia, which was a common sequela, never occurred in eunuchs. Not much good had been found to follow the use of vaccines. Dr. Leslie Roberts said he agreed with Dr. Whitfield that seborrhoea should be clearly distinguished from acne. Seborrhoea was essentially epithelial hyperplasia, occurring under the influence of some chemical substance formed within the body, and corresponding with the development of the sexual organs. The various clinical features which were associated with acne were to be attributed to the fermentation set up in the comedo by the presence of the microbacillus and *Micrococcus albus*. He congratulated Dr. Sabouraud on the broad and comprehensive way in which he had treated the subject, but he could not agree with him that seborrhoea was not to be considered as an epithelial exfoliation. In his opinion seborrhoea was a true epithelial exfoliation. Sir Malcolm Morris proposed a vote of thanks to Dr. Whitfield; this was seconded by Dr. Galloway, who added an interesting remark to the discussion in stating that Indian students who came to England for study were, out of proportion to the white population, subject to seborrhoea and acne, probably dependent on our moist climate. Dr. Norman Walker laid emphasis on general treatment, but spoke more warmly than his predecessors upon the value of vaccines, and agreed with Dr. Whitfield that doses of 150 million and upwards should be employed in preference to smaller. Attention was drawn to the dangers which might follow a too energetic treatment with *x* rays.

SECTION OF DISEASES OF CHILDREN.

AFTER the President, Mr. Robert Jones, had welcomed the members of the Association to Liverpool, he called on Mr. H. J. Stiles to read his paper on the after-results of the major operations for tuberculous disease of joints. This was based on the results of 205 resections of large joints, performed at Edinburgh between 1901 and 1911. The reader generally advocated extensive operative interference rather than conservative treatment in these tuberculous cases, arguing that the consequent shortening of the limbs was often a convenience to the patient rather than the reverse. Advice as to the details of operations about and excision of the hip-joint was given, with arguments in favour of obtaining stout ankylosis as a final result; the results of the various operations advised were illustrated by statistics. Particular stress was also laid upon the varieties of after-treatment advocated in different instances, and upon the importance of early diagnosis. Mr. A. H. Tubby complimented Mr. Stiles on his paper, and pointed out that most of his patients were children. In the case of the knee-joint he himself had entirely given up erasion in favour of excision, and he described how he employed the patella in the operation. He expressed some contempt of the nightmare shortening in these cases. In hip-joint disease he held that the disease was acetabular as well as femoral in half the cases—a consideration of the greatest importance. Much help from the use of the *x* rays could often be obtained. Mr. R. C. Elmslie gave the results of his experiences with the patients operated on by other surgeons during the last six years. He pointed out that the late results of many excisions of joints were far from satisfactory, possibly for want of adequate after-treatment. He laid stress on the importance of early diagnosis and adequate early treatment. Mr. E. Grey Turner emphasized the fact that the methods of treatment are often dictated by the means at hand for their employment. With ample hospital accommodation, conservative treatment became possible as well as desirable in most cases, giving an ankylosed joint just as an early operation would. Mr. G. H. Edington agreed that a bony ankylosis was the most desirable result in many of these cases, whether the treatment was conservative and expectant or by operation. Mr. E. M. Corner spoke as an apologist for operative treatment, in spite of the 77 per cent. of deformities resulting from knee-joint operations observed by Mr. Elmslie; he regarded these deformities as inevitable. Mr. R. C. Elmslie produced statistics indicating that expectant treatment gave distinctly better results than operation in the case of the knee. Mr. E. C. Simpson spoke as a compulsory advocate of conservative treatment in most cases; charitable help in the after-treatment was of the greatest practical value. In reply, Mr. H. J. Stiles agreed that conservative treatment, when financially and otherwise practicable, gave admirable results. He agreed that a high degree of skill in the surgeon was demanded for the successful performance of these difficult operations on diseased joints. He believed that the acetabulum was involved in at least 50 per cent. of the cases of hip disease, and that operation should take place before the acetabulum was destroyed. At the close of the day's proceedings Mr. Stiles gave a lantern-slide exhibition, showing skiagrams of ankylosed knees and hips at various periods after operation.

SECTION OF ELECTRO-THERAPEUTICS.

THIS Section, which met under the presidency of Dr. Thurstan Holland, followed the practice of its predecessors of the two last annual meetings and invited a distinguished physicist to deliver the inaugural address. Professor Rutherford, of Manchester University, in the course of an interesting paper, described the chemical effects produced by the radiations from active matter. It was probable, in his opinion, that the therapeutic effects of radium radiations, for example, were the result of the chemical changes brought about in the material which the radiations traversed. This chemical action might result in a dissociation of complex molecules or a building up of complex molecules, or both processes might take place together. He added that the chemical effects produced by the alpha, beta, and gamma rays were almost certainly identical. Such a result was, indeed, only to be expected from the similarity and character of the ionization produced. Consequently it appeared reasonable to suppose that each of these three types of radiation would produce similar therapeutic effects, granting, of course, that account was taken of their great difference in penetrating power. Professor Rutherford proceeded to make some suggestions to medical practitioners as to the utilization of the alpha rays (by means of injections of water charged with radium emanation), and the more extensive use also of the beta rays in

surface conditions. But he severely criticized the practice of introducing the actual radium or thorium salts into the system unprotected. Apart from the poisonous action, at any rate of the latter, the possibilities of ultimate destruction to the surrounding tissues were very serious. The remainder of the morning was devoted to papers dealing more definitely with the clinical aspect of radium. Dr. Ernest Shaw said that he had found malignant tumours undoubtedly diminish in size under the action both of radium and of the *x* rays, and although in a small number of cases there was diminution without this treatment, the proportion was much greater when the treatment was employed. His view was that Nature, in her attempts to check the invading cell of a malignant growth, brought all her inflammatory forces into line, and that radium and the *x* rays, while destroying a certain number of malignant cells outright, acted mainly as a stimulant to the healthy cells of the body to urge them on to still greater inflammatory action. Dr. N. S. Finzi followed with a paper in which he suggested the forms of malignant disease benefited by radium treatment. He urged that radium should be used as a prophylactic in every operation for malignant disease, and that an attempt to obtain a cure should be made in inoperable cases, especially in rapidly growing sarcoma and carcinoma and slowly growing epithelioma, but that rapidly growing epithelioma, except in the earliest stages, should be left severely alone. A short discussion followed, in which several speakers gave their clinical experiences of radium. Dr. William Armstrong, of Buxton, opened up a different side of the radium question in a paper advocating the radio-oxygen bath. He described certain preparations for generating oxygen in the bath from sodium perborate and manganese, which, he said, had placed this therapy on a sound basis. It was specially useful in cardiac and kidney cases in which hypertension was present. Mr. E. H. Howlett, of Hull, read a paper describing the acquirement of a quantity of radium by the corporation of his city. He made some suggestions for a radium standard, which was a necessity if radium treatment was to be given in the large number of cases which, as at Hull, claimed the use of the municipal property.

Section of Gynaecology and Obstetrics.

THE President (Dr. Briggs, Liverpool) welcomed the members of the Section, and in a few introductory remarks rapidly sketched the development of obstetrics and gynaecology, more particularly in the Midlands, and also their present position as a whole. Dr. W. S. A. Griffith (London) then opened, from the medical standpoint, a discussion on the results of treatment of inflammatory disease of the uterine appendages. It developed two main arguments: (1) The necessity for educating the public as to the real nature of the majority of these infections, with the potentialities of infection of an uncured gonorrhoea or gleet; and (2) the immediate arrest of the inflammation, combined with a regimen of rest and immunization. The methods of the older writers (rest, depletion, and resolvents) were reviewed, and the good results that might be obtained from these alone were noted. Modern treatment was discussed under the headings of: (*a*) Thermotherapy: The continuous hot douche gave more relief than the ordinary douche. (*b*) Radium treatment: Appeared useful in subacute and chronic cases; was of no service in acute or purulent conditions or in tuberculous inflammations; had the disadvantage of possibly sterilizing the patient. (*c*) Serums and vaccines: Useful both in gonorrhoeal and non-gonorrhoeal conditions; accurate diagnosis was, however, essential, and could not be made from vulvar or cervical cultures. Vaccines must at all times be subservient to operative interference. (*d*) Chemical disinfection: Excellent results were obtained, particularly when combined with vaccines. Mr. Christopher Martin (Birmingham) opened the discussion from the surgical aspect. He emphasized that the risk must be correlated to the benefit likely to be derived, and that in many cases conservative or even medical treatment might be sufficient. Ovarian inflammation was discussed separately from tubal. He advocated operation in acute ovarian inflammation only when suppuration existed, and then by the vaginal route. Chronic ovarian inflammation was best treated by separation of adhesions and puncture of cysts. The troubles following removal of the ovaries were mentioned and the possibility of helping these by ovarian extract. It was not advisable to remove the ovaries for epilepsy. In tubal inflammations, gonorrhoeal, tuberculous, or septic, the indications for conservative operations—such as separation of adhesions or salpingostomy—were laid down; a coincident curettage was recommended. Care was always necessary to exclude primary appendicitis. If the inflammation were bilateral and indications for removing the tubes were present, the uterus should be removed as well. One ovary should always be left if at all possible. For pyosalpinx a preliminary incision and drainage by the vagina gave the best results. Mortality statistics were given, and the possibility of herniae, sinuses, or fistulae resulting from operation was mentioned. Combined medical and surgical treatment was at all times strongly advised. Dr. Haultain (Edinburgh) was strongly in favour of removal of the ovaries for cases of epilepsy, which, in the first instance, appeared to be associated with menstruation; he had had three complete cures in five cases. Mrs. Scharlieb (London) was convinced that surgery must be called on when the resources of medical treatment were exhausted. The improved results of recent years she attributed to (1) preliminary vaginal incision and drainage of pyosalpinx cases; (2) vaginal drainage through the pouch of Douglas at the time of a radical operation; (3) the removal of the uterus with the tubes. Dr. Amand Routh (London) cordially agreed with the modern Birmingham view, or that expressed by Mr. Martin, as distinguished from the old-time view. He advocated disinfection of the uterine cavity with strong iodine, and in the later stages electric heat and light to the abdomen. The necessity for physiological rest in cases treated by conservative methods was pointed out. He had had good results from gonococcal vaccines, both in acute and chronic cases. He did not consider that an acute pyosalpinx should ever be removed by the abdomen; in many cases vaginal drainage cured without further operation, and pregnancy might follow a bilateral excision of this nature. Sir John Byers (Belfast) congratulated gynaecologists on having reached a stage of stable equilibrium in treatment. He advised vaginal drainage and considered vaccines useful. Professor Hellier (Leeds) reminded members that an operation might be more expedient than invalidism. He mentioned yeast suppositories as a disinfecting agent. Dr. Beckwith-Whitehouse (Birmingham) had found the endometrium in many cases sterile; he had found ovarian grafts useful. Drs. Purslow (Birmingham), Edge (Wolverhampton), Bell (Bradford), Ivens (Liverpool), Gemmell (Liverpool), Burnett (Newcastle), and the President spoke. In replying, Dr. Griffith considered that drainage was always carried much too far; pure gonococcal peritonitis was practically never fatal; he agreed as to the advisability of a rational conservatism. He regarded mere statements of the advantage of removing ovaries in epilepsy or dysmenorrhoea as harmful. Mr. Martin, also replying, said he had never seen hernia from vaginal drainage; he had been unsuccessful with ovarian grafts.

Section of Laryngology and Rhinology.

IN opening the proceedings of this Section the President, Mr. Middlemass Hunt, reviewed shortly the progress that laryngology had made in the city of Liverpool. There were now no fewer than eight men who confined themselves to the treatment of this class of case, and there was now a lectureship in laryngology at the university. There was much, however, that required to be done in the way of provision of beds. Professor O. Kahler, of Freiburg, then read a paper on excision of the oesophagus, which contained much valuable thought and observations, with statistics. It was discussed by Mr. Waggett, who emphasized the necessity of coming to some conclusion as to the diagnosis of oseophageal constriction and the methods to be adopted. He regretted the continued presence in textbooks of the blind passage of a bougie as a diagnostic measure. In these days more advanced and restricted means should be adopted. Dr. Brown Kelly then gave a lantern demonstration showing the passage of bismuth down the oesophagus, and referred to the question of cardiospasm. The term really covered not so much a spasm as an absence of

dilatation, which he considered a failure of nervous mechanism, which he illustrated by reference to experiments upon cats whose vagi had been divided. Dr. Hill, who spoke again later, attacked the theory of a sphincter at the cardiac end of the oesophagus, illustrating his views. Dr. Walker Downie having discussed the relationship of syphilis to oesophagal stenosis, the President expressed an opinion that there would be a difficulty in obtaining a sufficient number of men educated in the passage of an oesophagoscope, and in such cases the use of a bougie was less dangerous than the former. Drs. Moseter, Jobson Horne, Bronner, Hope, Guthrie, Sir StClair Thomson, and Dr. Tilley continued the discussion, which revealed differences of opinion as to the abolition of the bougie as a diagnostic instrument, though most recognized that by its use no exact and certain diagnosis could be made. The proceedings concluded with a paper by Dr. Bronner on some cases of painful ulcer of the mouth of the oesophagus associated with atrophic catarrh of the pharynx, and a demonstration by Dr. Irwin Moore on the panelectroscope of Kahler-Leite.

Section of Medical Sociology.

In opening the proceedings of this Section, the President, Dr. J. C. McVail, commented on the extension within recent years of the relations of the medical profession with public bodies of all kinds, and said that the Section should be one of the most important in the Association. Dr. R. R. Rentoul (Liverpool), in a paper on a Public Medical Service under professional control, expressed himself in favour of the "nationalization of medicine," enumerating the classes of medical men already in the service of the State or municipality. He proceeded to develop a suggestion for a Public Medical Service on the following lines: The Insurance Committees should pay to the doctor the 6s. per insured person received from the Commissioners; this might be increased to 7s. in the case of the Post Office contributors, they requiring more medical attendance. The Insurance Committees should pay a further 2s. 6d. for medicines to doctor or chemist. Each insured person should pay a yearly sum of 5s. to the doctor. This, he calculated, would give the doctors an income of £472 gross in respect of insured persons exclusive of certain extras. Dr. Ferdinand Rees (Wigan), in a paper on the same subject, urged that the problems of the future were community problems, and medicine should be regarded as a national service concerned with the care of the health of the community. He was sorry to see a tendency in the medical profession to subscribe to the syndicalist theory that the members of an industry should control that industry entirely, primarily in the interest of themselves. This was contrary to the communal theory that each industry must be conducted primarily in the interests of the community. Since the working classes, from their inadequate incomes, could not properly remunerate the services of the profession, the State, drawing the funds from the well-to-do, should organize a Public Medical Service. A medical service completely under professional control he looked upon as impossible of realization. Mr. H. A. Ballance (Norwich) gave an account of the Public Medical Service established by the profession in that town, and Dr. Wallace Henry (Leicester) described the system just inaugurated in Leicestershire. Dr. R. J. Irving (Southport) made some suggestions for the working of an ideal system; and Dr. A. G. Gullan (Liverpool), one of the honorary secretaries of the Section, put forward some practical objections to a State medical service. Professor B. Moore (Liverpool) urged that united action on a practical scheme was very necessary if medical benefit under the Insurance Act was to be suspended. Dr. J. H. Taylor (Salford) dealt with the limitations of professional control in a public service, and Dr. Harris (Southport) spoke of difficulties in fixing a fair wage limit. Dr. M. Dewar (Edinburgh) and Mr. William Grisewood, the secretary of the Liverpool Charity Organization Society, contributed papers on the abuse of hospital out-patient departments and the preventive steps required; and Dr. R. R. Rentoul and Dr. Beresford Kingsford contributed to the subsequent discussion.

Section of Medicine.

A discussion was opened by Dr. David Lees (London) on the diagnosis and treatment of early cardiac complications of rheumatism. For the purposes of discussion, he stated the following views, some of which he acknowledged were debatable: (1) Acute and subacute rheumatism is a microbic infection most common and most virulent in childhood, less frequent and usually less virulent in adolescents and young adults. (2) There is but one symptom which is present in every case of the disease. Arthritis, nodules, endocarditis, pericarditis, pleurisy, tonsillitis, erythema, chorea, and all other rheumatic symptoms may be present or absent, but dilatation of the left ventricle is invariably present. The dilatation is caused by toxaemia or myocarditis, or both combined, and it is a very early symptom. (3) The dilatation can be easily detected by careful percussion rightly performed. It is quite easy to determine accurately the sloping line of dullness of the edge of the left ventricle in the fourth and fifth left interspaces and that of the right auricle in the fourth right interspace. (4) The first essential for the successful treatment of the cardiac implication of rheumatism is prolonged rest. (5) The second essential is an adequate antirheumatic medication, the most useful form of this being a combination of sodium salicylate and sodium bicarbonate in the proportion of one part of the former to two of the latter, given in adequate and increasing doses. (6) During the treatment by salicylate it is necessary (*a*) to prevent constipation; (*b*) to keep the urine slightly alkaline; (*c*) to stop the medicine when vomiting or other symptoms due to salicylate occur, but to resume it after a few hours in a dose of one half the size of the dose last given, and soon to increase the amount as far as possible. (7) When the dilatation (with or without endocarditis) is great, and especially when pericarditis is present, the medicine should be freely given, and an ice-bag should be kept permanently over the praecordial region, with due precautions against general chill. Careful nursing is essential. The application of leeches is sometimes beneficial. Dr. Abrams (San Francisco) agreed as to frequency of cardiac dilatation in cases of acute rheumatism, and regarded it as absolutely essential that rheumatism should be treated by efficient doses of salicylate. He considered, however, that salicylate itself was able to produce cardiac dilatation. He emphasized the importance of the vagus nerve in relation to the heart manifestations in acute rheumatism, and whilst disagreeing as to the value of salicylates in them, considered pilocarpin a most valuable drug to counteract the heart failure. Dr. F. J. Poynton (London) said that Dr. Lees's remarks had reminded him of fifteen years ago, when he had the honour of working with him on the subject of acute dilatation of the heart. He thought that much advance had been made since them. He was not convinced of the constancy of dilatation of the left ventricle, nor was he convinced that the treatment of the heart manifestations by salicylates exerted any useful effect. He believed that the bacterial poisons were so subtle that they varied with the tissues in which the lesion occurred, and he thought that salicylate might be specific in some forms and not in others. He pointed out the frequency of mitral stenosis in cases of recurring chorea, and indicated a group of cases in which cardiac rheumatism began as a tachycardia. Dr. Carey Coombs (Bristol) said that the streptococcal theory of rheumatic infection received support from recent experiments on rabbits which he had carried out with Dr. Reginald Miller and Dr. E. H. Kettle. Histological examination had shown that the lesions were similar whatever the organ attacked; that there was no difference between the phenomena produced by five different strains of streptococci; that the type of reaction was essentially similar to that characteristic of human rheumatism. Dr. Frederick Langmead (London) said that out of 2,556 school children he had found rheumatism in between 5 and 6 per cent. Rheumatism was usually undetected in its first attack, and so was untreated. A crippled heart developed insidiously without any striking rheumatic manifestations having been noted. Tonsils were enlarged enough to require operation four times more frequently in rheumatic children than in others, and this suggested the importance of tonsillitis as an evidence of rheumatism and as a possible source of the infection. A crusade against rheumatic fever was urgently required. Dr. F. W. Price (London) urged that the points which conduced to successful treatment were prophylaxis and early diagnosis. Dr. William Hunter regarded the tonsils and nasal passages as

the source of the infection, and thought that attention in treatment should be paid, not so much to the manifestations of the disease as to its cause and mode of entry. After Dr. Halls-Dally (London) and Dr. T. R. Bradshaw (Liverpool) had contributed to the discussion, Dr. Lee replied.

SECTION OF NAVY, ARMY, AND AMBULANCE.

COLONEL DAMER HARRISSON, K.H.S., A.M.S. (T. F.), the President of the Section, in opening the meeting, expressed the great pleasure he felt in being able to welcome not only officers of the naval and army medical services, but also Major-General W. Lindsay, commanding the Territorial Division, and his staff. He then called on Captain N. Dunbar Walker to read his paper on factors affecting the marching powers of troops. Captain Walker's paper contained a general survey of all the complex factors which affect the marching powers of troops. The more important points on which special stress was laid were the following: Age and training, in which connexion it was pointed out that Napoleon insisted on having fully grown men, as he said that "boys merely filled the hospitals." With regard to the load of the soldier, the energy expended by a soldier when marching depended mainly on the load he carried and not on the distance marched. This load should not exceed one-third of the body weight; hence the load of the British soldier, which was at present 59 lb., should be reduced to 47 lb. Another point was water on the march, because if the water lost by evaporation were not replaced, body temperature rose, and the man became unnecessarily fatigued, and under unfavourable climatic conditions might even become a victim of heatstroke. Other important points were rests on the march, the absolutely prone position being the most truly useful, and climatic conditions. A high wet-bulb temperature had a very adverse effect on the marching powers of troops, since evaporation of moisture from the skin was impeded. Colonel Damer Harrisson opened the discussion by congratulating Captain Walker on having selected a subject of such general interest. In explanation of the fatigue caused by not being able to march at one's own pace, Colonel Harrisson quoted Professor Macdonald's work in the physiological department at Liverpool. It showed that, in order to avoid fatigue, the flexor and extensor muscles of the thigh must be permitted to relax completely between each pace. Major-General Walter Lindsay, C.B., D.S.O., commanding the West Lancashire Territorial Division, said he had always been mounted, and was not therefore in a position to discuss the marching of infantry, but that he had attended the discussion in the hope of picking up some useful hints for the manœuvres in which his division was about to take part. His men suffered from nearly all the disadvantages which the lecturer had enumerated. The paper had afforded him a great deal of useful information. Surgeon-General W. Babtie, V.C., Deputy Director-General, Army Medical Service, referring to the remarks on the age of the soldier, said that our army at home must always contain a number of not fully developed young men. The reservist did good service in South Africa, but in future wars mobilization would probably be rapid and there would not be much time for reservists to go into training. Training in marching, especially marching with the full service load, was all-important, because if any article—say ammunition—was not carried, the proper balance of the load was not maintained. While admitting that the present load of the soldier was excessive, he said that the only real reduction which could be effected was by reducing the weight of ammunition carried on the man, which was a question for the general staff to consider. Mr. T. S. Ellis (Consulting Surgeon, Gloucester Infirmary) urged the importance of marching with the feet turned straight to the front. Colonel Adams (commanding North Lancashire Infantry Brigade) spoke of the value of cross-country races in developing the recruits' physique. He also pointed out the great harm caused to immature lads by cigarette smoking. Major Spiller, R.A.M.C., Fleet Surgeon Whitelegge, and Fleet Surgeon Wildey, R.N., also took part in the discussion. Captain Walker then replied. Fleet Surgeon A. G. Wildey, R.N., then read a paper advocating the more general use of iodine in first-aid treatment. It recorded his experience at the Royal Naval Hospital, Chatham, during the year 1911. His practice was in every case of accidental wound, no matter how severe, to flush out the wound immediately with a freshly prepared 2 per cent. alcoholic solution of iodine, followed, in the case of deep wounds, by sterile saline solution. As a result of this form of treatment sepsis had become very rare, even in badly crushed and dirty wounds, and the number of serious cases of injury under treatment had been reduced by 26 per cent., in spite of an increase of 10 per cent. in the number of injuries of all kinds. A bandolier specially designed for carrying iodine and alcohol for the immediate preparation of the 2 per cent. solution was then demonstrated.

SECTION OF NEUROLOGY AND PSYCHOLOGICAL MEDICINE.

THE proceedings of the Section of Neurology and Psychological Medicine were opened under the presidency of Dr. Landel Rose Oswald (Glasgow), who, after drawing the attention of the members to the importance of the matters awaiting discussion, called upon Dr. Percy Smith (London) to open the discussion on the neuroses and psychoses of the climacteric, their prognosis and treatment, reserving, he said, his introductory remarks till the end of the session. Dr. Smith then read an able and comprehensive account of the insanities of the climacteric, with reference to authoritative writings, but based mainly upon personal cases at Bethlem Hospital and in private work. Speaking from the psychiatrical point of view, Dr. Smith discussed the usually assigned factors in the light of his own figures. Prognosis and treatment: So far as recovery was concerned, his figures gave a recovery-rate in 42.3 per cent. of Bethlem Hospital cases, and in his private cases 26.4 per cent. in first attack cases and 33 per cent. in not-first attack cases. The treatment, Dr. Smith said, was in no sense different in principle from that which guided the treatment of other forms of mental disease. Dr. C. J. Macalister (Liverpool), who followed and discussed the climacteric psychoses from the point of view of general medicine, dealt with general principles, considering these psychoses as due to metabolic faults, inco-ordinations of function occurring at times of physiological stress. Dr. Grimsdale (Liverpool), presuming, he said, an ignorance of gynaecology in his auditors as profound as his own ignorance of psychiatry, gave an illuminating description of the underlying processes of the menopause. He said that true menopausal symptoms cleared up in one and a half to two years, but that many symptoms referred to this period were not truly menopausal. With regard to treatment, all he would say, quoting Rudyard Kipling, was:

> There are sixty different ways
> Of composing—native lays,
> And every single one of them is right.

In the subsequent discussion Dr. Maule Smith, Dr. Greenlees (London), Dr. Alexander (Liverpool), Dr. Warrington (Liverpool), Dr. Blair (Lancaster), Dr. Devine (Wakefield), and Dr. Purves Stewart (London) took part. The last named, in a few brief words, discussed the neurological aspect of the minor disorders of the climacteric, grouped as cardio-vascular, psychical, and visceral, and gave the results of his experience in the general and drug treatment. Ovarian extract he described as useless and irrational—the mere putting of new wine into old bottles. He said that he had seen good results follow the exhibition of ammonium bromide with valerian.

SECTION OF OPHTHALMOLOGY.

Mr. GEORGE COATS (London) opened the discussion on irido-cyclitis. He entered into the pathology of the disease, and laid stress on the question of autoinfection through intestinal putrefaction. He pointed out the fact that blue eyes were more likely to be affected than those of other colours, but this might be due to a bleaching of the pigment due to the cyclitis. As regards the actual cause, much was left to speculation, especially in the case of sympathetic ophthalmitis. Salvarsan had been tried in 3 cases of this disease which he had treated. In one old case no good came of it, in the second eye considerable improvement resulted, and in the third case some improvement was noticed. According to Elsing, a hyposensitive condition of the eye and some general anomaly was the cause. One of the most marked conditions in sympathetic

mischief was the extremely widespread nature of the disease in the eye. Mr. A. W. Ormond (London) discussed the question from the etiology of the disease, with special reference to gout and rheumatism. Of 1,963 cases of acute rheumatism treated at Guy's during ten years, he had found that so sudden did iritis occur that it was not right to look upon this disease as a cause, but acute rheumatism was often simulated by other disease. Gout had even less claim as a producer of iritis than rheumatism, and if it did cause it it could only be due to toxins, but the probability was that iritis was always due to micro-organisms. Rheumatoid arthritis was quite likely to cause it. After Professor Snellen (Utrecht) had spoken, Mr. C. Worth (London) said that the most important cause of irido-cyclitis was general septic intoxication, and usually from the intestinal tract. He was not convinced of the existence of rheumatic and gouty iritis—in one case he mentioned it was due to the *Bacillus coli* in the urine. Some cases of irido-cyclitis were very apt to be mistaken for chronic glaucoma. Mr. Clegg (Manchester) mentioned a case in which blueness of the iris developed during an attack. Mr. Browning (London) related some cases due to intestinal intoxication, but he had been unable to find the organism in the anterior chamber. In urine he had scarcely ever found an abnormal amount of indican, but this was common in cases of constipation. It was quite certain that if pyorrhoea alveolaris was present the iritis could be cured by getting rid of the pyorrhoea. Mr. Brailey (Brighton) thought that toxins could cause keratitis punctata. Mr. Harrison Butler (Coventry) had no doubt as to the effect of teeth as a cause of irido-cyclitis, though in Palestine, in spite of much oral sepsis, iritis was extremely rare. He did not think that constipation alone was ever a cause of the disease. Tuberculosis was a most important etiological factor, and he considered that practically all cases of phlyctenular conjunctivitis had tubercle in some part of the body. Mr. George Mackay (Edinburgh) thought that the deposit of keratitis punctata in a triangular fashion was really a fallacy, and the spots were deposited everywhere. He thought the *Bacillus coli* was responsible for many cases and gave proof of it in some cases. Mr. Bishop Harman (London) regarded the experimental evidence of rheumatic iritis as inconclusive. These cases looked like cases of general septic infection. He mentioned a case of ruptured sclera without any wound of the conjunctiva in which sympathetic inflammation resulted. Professor Igersheimer (Halle), and Dr. Maitland Ramsay (Glasgow), discussed the presence of defective elimination of the urine. Mr. Coats replied. Dr. Karl Grossmann having read a paper on the Board of Trade standard of vision and discussed various points in regard to vision, Dr. J. W. Barrett mentioned the case of the loss of the P. and O. ss. *Australia* at Port Philip. He said that Australia had altogether given over the Board of Trade tests. Mr. Devereux Marshall (London) commented on the unsatisfactory report of the Board of Trade. Mr. Bickerton (Liverpool) emphasized what Mr. Marshall had said. He thought that it was impossible to demand full normal vision in one eye and half in the other. Mr. Bishop Harman (London) thought that glasses were impossible at sea. Mr. Harrison Butler (Coventry) also said that glasses were impossible. Mr. Claud Worth (London) thought that normal vision was necessary. Vision of Snellen $\frac{6}{9}$ was very low. He dealt with the following points: Marine glasses. ? Spectacles. Holmgren test was cheap. Colours not to be named but only matched. Colour ignorance test superfluous. Light seen in crow's nest ought to be seen before the bridge. What about fog? The Board of Trade report was very unsatisfactory.

SECTION OF OTOLOGY.

THE President (Mr. Hugh E. Jones, of Liverpool) initiated the proceedings by calling attention to the fact that the key-note of the discussion to be held was *Prevention*. He then called on Mr. R. H. Woods (Dublin) to introduce the subject of acute middle-ear suppuration, its neglect and proper treatment. Mr. Woods commenced by defining the condition as a diffuse inflammation of a mucous tract, and not an abscess. The disease was due in most cases to predisposing causes in the naso-pharynx and nose, particularly to obstructive causes such as adenoids. The clinical course in all cases was essentially the same, three stages being recognized—the stage of catarrh, the stage of suppuration, the stage of healing. The degree of severity of the disease in individual cases depended upon two factors—the state of the patient and the microbe involved. He went on to discuss the symptoms and the nature of the fluid found after rupture of the membrane. The nature of the fluid was essentially the same, whether rupture occurred after a few hours or in a few days. He laid great stress upon what he considered to be the fundamental difference between acute and chronic otitis media. Every otitis started as an acute infection, but the chronicity of the condition was determined by whether the infection was a monosepsis or a polysepsis—one type of organism or a mixed infection. In discussing the question of treatment, he emphasized the importance of preventing, by proper cleansing of the external meatus, reinfection of the middle ear from without. If the membrane was bulging, myringotomy should be performed without delay. Should the condition of the patient not improve after this operation, then the necessity of opening up the mastoid antrum was to be considered. Under no circumstances should the radical mastoid operation be performed. Mr. Woods concluded his remarks with an expression of regret that the handling of the middle-ear conditions occurring in the course of the acute specific fevers was not yet properly appreciated by the general physician. Dr. Claude Rundle (Liverpool), who followed, presented the case from the point of view of the fever expert. He called attention to the fact that the percentage of incidence of otitis media following scarlet fever was lower in Liverpool than in any of the hospitals controlled by the Metropolitan Asylums Board or in Manchester. His experience was that in the majority of instances the otorrhoea had ceased about fourteen days before the patient's discharge from hospital. From the point of view of treatment he did not consider the various methods of intratympanic medication justifiable; his experience was that paracentesis was but rarely called for. He did not think that the operation for the removal of tonsils and adenoids was at all justifiable during the acute stage. He had found the exhibition of horse serum very valuable in otitis complicating the acute exanthemata; autogenous vaccines he had tried and found to be quite useless. Extracts from a paper by Professor Alexander of Vienna were then read (in the regrettable absence of the author) by Mr. W. M. Mollison (London). After dealing briefly with the pathology and clinical course of suppurative otitis media, the author proceeded to expound his views as regarded treatment. Symptomatic treatment was described in detail, as also the proper precautions to be undertaken in performing the operation of myringotomy. Professor Alexander's methods for ensuring free drainage were fully set forth. He also declared against any operation for the removal of obstruction during the acute stage of the disease. There followed a clear account of the author's experience with urotropin. He had found that in chronic cases with a fetid discharge the fetor was markedly diminished in a few days, whilst in acute cases the purulent state was generally shortened. He was in favour of administering large doses previous to the mastoid operation to avoid the onset of meningitis. In the discussion which ensued the following took part: Professor Mygind (Copenhagen); Professor Ballenger (Chicago); Mr. Adair Dighton (Liverpool); Dr. W. Milligan (Manchester); Dr. Kerr Love (Glasgow); Dr. Watson-Williams (Bristol), and the President. All the speakers were unanimous in advocating early paracentesis, and in condemning in the strongest possible terms the performance of the radical mastoid operation in the acute stage. Mr. Woods and Dr. Rundle briefly replied. A paper was then read by Dr. William Milligan (Manchester) on the value of decompression operations in intracranial complications of otitic origin, with special reference to the treatment of otitic meningitis. The discussion was continued by the President, Professor Mygind, and Mr. Stockdale (Liverpool). Dr. William Milligan replied.

SECTION OF PATHOLOGY.

UNDER the presidency of Professor Walker Hall (Bristol), the Section settled down to a discussion on Bright's disease, which was opened by Professor Lorrain-Smith (Manchester) with a paper on the morbid anatomy and etiology of the disease. He had made a special study of

the distribution of fibrous tissue in the cortex of the kidney in various forms of Bright's disease, which led him to divide the lesions into two main groups—namely, (1) in which the fibrous tissue is diffused throughout the whole cortex; and (2) in which the fibrosis is found in patches; the former is exemplified in large white kidney. He discussed at length the minute histological changes, and held that circumscribed fibrosis may originate as a typical scarlatinal nephritis. In the unavoidable absence of Sir Clifford Allbutt, his paper was read by the President. He dwelt on the cardio-vascular changes, first attempting, however, to simplify the nomenclature, which was unnecessarily complicated, different names often being used to denote the same lesions. He discussed the condition of "granular kidney," and disbelieved entirely the condition of "potential Bright's disease" of Straus as not being renal in any sense. Hyperpiesis he considered to be a malady not "granular kidney," but resembling it in the increased blood pressure and the proneness to apoplexy, though curable. He commented very adversely on some recent papers by Drs. Batty Shaw and H. French, and appealed to younger pathologists for elucidation of many points. Dr. W. H. Gaskell (London) put forth the results of some past work on the subject, and presented a good workable classification of the different forms of Bright's disease, dividing the lesions up into (1) toxic, (2) inflammatory, and (3) arterial. His renal sections, all done by the freezing method, was very instructive and supported his views on many points. Dr. Craven Moore (Manchester) drew attention to the deficiencies in our knowledge of such disorders of metabolism as may occur in association with destructive lesions of the kidneys. Dr. Shennan (Edinburgh) discussed also the difficulties of nomenclature, and pointed out that there could be no change solely confined to one part of the renal structure, but that the process was a mixed one, with predominant activity of epithelial, or fibrous, or vascular elements. He pointed out that the pathologist's designation did not always coincide with the clinician's, and laid stress on the fact that the ultimate object of all the work must be the recognition of the diagnosis of the state of disease during life, and appealed for a closer co-operation of the clinician and the pathologist. So great a modesty was exhibited by the clinicians present in their appeal to the pathologists to help them in diagnosis and even in prognosis that Dr. Bernstein (London) was impelled to ask what was the status of a clinician if he was not a pathologist? Dr. de Carle Woodcock (Leeds) joined in the discussion, which was then terminated with a few words from the President. The general impression seemed to be that, though many anatomical facts had been laid before the meeting, much concerning Bright's disease was left untreated, and a great opportunity had been lost of thoroughly threshing out a subject of such extreme importance from every point of view. A well-illustrated paper by Dr. Wilkie (Edinburgh), on the association of chronic duodenal ulcer with morbid conditions of the ileum, appendix, and colon, completed the proceedings of the session.

Section of Pharmacology and Therapeutics.

The Section of Pharmacology and Therapeutics met in the Physical Chemistry Theatre under the presidency of Professor W. E. Dixon, F.R.S., of Cambridge, who, having welcomed the members present, mentioned with satisfaction that for the first time a journal devoted entirely to experimental therapeutics and pharmacology would be published in this country. Arrangements had been made by which the *Journal of Pharmacology and Experimental Therapeutics*, at present published in America, would be published simultaneously in New York and in Cambridge under the joint editorship of Professor Abel of Baltimore and Professor Cushny of London. Dr. A. Goulston (Exeter) then read a paper upon the effect of dextrose in the treatment of some forms of heart disease. He recorded clinical observations which seemed to show that the benefits of the treatment were only apparent when West Indian cane sugar was used, and did not appear when beet sugar was substituted. Although these substances were clinically indistinguishable, he felt sure that this difference existed. The paper was discussed by the President, Professor F. J. Charteris (Glasgow), and Dr. O. T. Williams (Liverpool). The next paper was one by Dr. O. T. Williams (Liverpool), and dealt with cod-liver oil and its action in phthisis. The author referred at the outset to earlier work in which he had shown the beneficial effect of cod-liver oil upon fat absorption, and on nitrogen absorption, and to the experiments of Dr. Mildred Powell, which showed that unsaturated fatty acids had a marked inhibitory effect upon the growth of the tubercle bacillus. He had investigated the composition in this respect of various preparations in the market. In those preparations which were most effective the unsaturated acids were present in relatively large amounts. Both clinical and experimental evidence was in favour of considering cod-liver oil as a valuable scientific agent in phthisis. The paper was discussed by Professor C. J. Marshall (Dundee), Dr. Gordon Sharp (Leeds), Professor J. H. Abram (Liverpool), Professor F. J. Charteris (Glasgow), and the President. Professor Charteris then read a paper in which he recounted his experiences in the treatment of pernicious anaemia, leukaemia, Hodgkin's disease, and chorea with salvarsan. As a whole, the treatment had proved disappointing, and the results inferior to those obtained with arsenious acid. The paper was discussed by the President and by Professor C. R. Marshall (Dundee). A paper upon clinical experiences with tetrahydropapaveroline hydrochloride was read by Professor Marshall (Dundee). The drug had proved disappointing. It was a less active vasodilator than members of the nitrite series, perhaps because it was too readily oxidized. The paper was discussed by Dr. Gordon Sharp (Leeds) and the President.

Section of Physiology.

The President, Professor J. S. Macdonald, stated in his opening remarks that, as an old member of the Liverpool Physiology School, he had great pleasure in presiding over the Section. He then showed some very interesting lantern slides concerning the various constituents of the blood; how in serum there was a necessity of supplying some organic acid, and in red blood corpuscles of giving some organic base; that there was apparently a mutual antagonism between these two constituents of the blood. This coincidence was inexplicable to the author, but on account of its great and real interest he thought it suitable to bring before the notice of Professor B. Moore and his co-workers. He gave, in conclusion, a very pretty demonstration of simultaneous contrast. He thought that the explanation of this phenomenon was of the same order as that discovered and expanded by Professor Sherrington—namely, that the central nervous system cannot be stimulated without calling into play certain secondary changes. At the conclusion of his short address he called on Dr. Mott (London) to open the discussion on the bio-physics and bio-chemistry of the neurone. Dr. Mott emphasized the necessity of care in the study of preparation of the nervous system. He held that quite a false idea of the structure of the nervous system was obtained if only stained specimens were studied. All that was to be seen when the fresh living unstained specimen was examined under the microscope was a homogeneous colloidal mass. In the living nerve cell there was no trace either of Nissl granules or fibriles. When the ultramicroscope was used in the examination some cells were more luminous than others, but this luminosity was variable. He next spoke of the growth of the neurone, paying a warm tribute to the work of Ross Harrison. He then dealt with the results of the degenerative processes. He showed that physical changes took place in connexion with the equilibrium of the cells—that endosmosis occurred. The cell swells up and the Nissl substance was pushed to one side. If the nucleus was extruded the cell would die, if not, it would probably recover. Sometimes a tremendous endosmosis into nucleus instead of the cell itself took place. Dr. Mott believed that here the vital condition of the nuclear membrane was probably changed, due to the lack of oxygen. Pyrexia altered very considerably the granular staining of the cell—granules disappear and a homogeneous material took its place. This change was probably due to the precipitation of a neurone globuline. In status epilepticus the cell endosmosis was particularly marked—almost an oedema. Dr. Mott did not think that this was due to the fits, but to the temperature and the venous stasis in the brain. In

conclusion, he described a very curious nervous lesion—amaurotic idiocy—found only in Jewish children. This is characterized by a gradual disappearance of the Nissl granules from the periphery of the cell inwards with eventual destruction and disappearance of the cell itself. Professor Sherrington (Liverpool) spoke of the great value of unstained specimens, endorsing the statement of Dr. Mott that Nissl granules and fibrils are to be taken with caution. He allowed, however, that these artefacts do assist in the better understanding of the material from which they are derived. Dr. Wakelin Barratt (Liverpool) discussed the purely mathematical and physical side of the question—the hypothesis of Nernst. Professor Macdonald raised several extremely interesting questions. One was whether there was an importance to be attached to the conception that the central nervous system is insulated from the rest of the body. Another point was the peculiar relationship of the musculature to the central nervous system. This system sends out a certain amount of energy and is also in receipt of energy; therefore, there did not seem to be the same necessity for the liberation of energy by combustion as took place in other tissues. He suggested that the musculature was a kind of energy-pump, which kept the reservoir of the central nervous system full. Professor Macallum (Toronto), who followed, stated that he always felt that too much stress was laid on the study of fixed tissue; structure varied with the fixative reagent used. Surface tension played an all-important rôle in the life-history of the nerve cell. Potassium salts were distributed along the axone, and were absent from the cell body. This same distribution of potassium salts was also found in a number of the lower organisms like *Vorticella*. Every extensible portion of the cytoplasm has potassium condensed in its substance. Disturbances in the surface tension of the nerve cell proper led to a "nipple" reaching the axone; this in turn led to a shifting, be it ever so slight, of the potassium in the axone. Possibly these changes account for the nerve impulse itself. Professor B. Moore (Liverpool) also endorsed the view that great care had to be employed in assessing the value of artefacts. More information was urgently required on the relation of electrolytes to colloids. Surface tension alone could not explain all the differences found. Dr. Haddon (Hawick) spoke on the value of clinical evidence and the great necessity of a further study of the influence of food. Dr. Vernon (Oxford) and Dr. Graham Brown (Liverpool) also spoke, and Dr. Mott (London) replied.

SECTION OF SURGERY.

THE Section of Surgery met in the Medical School under the presidency of Professor Rushton Parker. Professor Parker, in a few words, welcomed the members of the Section, and made reference to the death of Lord Lister, and to the influence of his life and work on the surgical world. He introduced Mr. Harrison Cripps, who initiated the discussion on the treatment of carcinoma of the rectum. Mr. Cripps paid tribute to the workers in this region of surgery, and indicated how much was due to the efforts of British surgeons. Practically the only type of cancer found in the rectum was the adenoid cancer. The relationship between innocent polypoid growths and cancer was much more close than was apparent. There was really no essential difference in structure between the innocent papilloma and the most malignant cancer. But there was a great difference in their mode of growth; an innocent tumour invariably grew outwards or upwards into the lumen of the bowel, while a malignant tumour was characterized by downward growth. In regard to the spread of the disease his view was that lymphatic infection was late, and it is probable that on that fact depended much of the success of operations. He was content, in removing a tumour, if he cut about ¾ in. beyond its margin, and he was not able to follow those pathologists who contended that, on account of distant permeation, nothing but the most extensive operation was of any avail. He was anxious also to enforce his belief that cancer of the rectum should not be diagnosed unless it could be felt by the finger, and he would urge great care, in making examinations per rectum, that the finger should not be forcibly pressed through any constriction. Mr. Harrison Cripps enunciated his definite opinions as to what constituted a satisfactory case for operation. In considering recurrence, he held that if it were to recur at all it should recur within a year, and if a patient passed three years without recurrence he thought that the patient could be assured that recurrence need not be feared. In speaking of the value of colotomy as a palliative operation, he said that his statistics showed that the average duration of life in those patients who refused colotomy was only seven months, whilst in those who accepted the operation it was twenty-two months. Mr. Harrison Cripps's paper was fully illustrated by diagrams and tables of statistics. The debate was carried on in spirited fashion by sixteen members of the Section. Mr. C. A. Morton narrated his experiences of the abdomino-perineal operation, and stated that he had definitely abandoned the Kraske operation. Mr. G. Heaton and Dr. Sinclair White urged the employment of a preliminary colotomy. Mr. Sampson Handley maintained that he had definitely shown that permeation of cancer cells was found 4 in. to 6 in. away from the primary tumour, and he held that on that account the more extensive operation than could be accomplished by the perineal route was justifiable. Mr. C. P. Childe. Mr. C. A. Leedham-Green, Mr. Herbert Paterson, Mr. A. Don, Mr. Jordan Lloyd, Mr. Albert Lucas, Mr. Armstrong of Montreal, Mr. Fullerton and Mr. G. P. Newboldt also contributed to the discussion. In reply, Mr. Harrison Cripps deprecated any thought of rivalry between the perineal and the abdomino-perineal operations. He thought that each case must be judged absolutely on its own merits, with due care in selection of cases, and, above all, on common-sense lines.

SECTION OF TROPICAL MEDICINE.

PROFESSOR TODD, President of the Section, gave no formal address, but after a few introductory remarks of welcome, called upon Dr. Stephens, who dealt with *T. rhodesiense*, and gave in some detail the evidence on which Dr. Fantham and he relied to show that this parasite was a second species of African trypanosome, producing sleeping sickness in man. There were not only morphological differences, but the animal reaction showed that *T. rhodesiense* was characterized by its virulence in the majority of animal species. The serum reactions, and trypanolytic reaction also, showed marked difference. The authors conclude that sleeping sickness in Rhodesia, Nyasaland, and adjoining territories is due to *T. rhodesiense*, that it is not due to a *T. gambiense* recently introduced, and has existed in these territories from time immemorial. A paper on the identity and mode of transmission of trypanosomes, by Professor F. Kleine, was then read in the author's absence by the Secretary. He was of opinion that the period of mutability of trypanosome had passed, and that we had now sharply defined groups, differing in pathogenicity and other biological properties. For example—all attempts to alter the specificity of trypanosomiasis in the body of *Glossina palpalis* have proved fruitless. He insisted on the necessity of uniformity in the experiments, otherwise results were unsatisfactory; and concluded that if certain precautions were taken, failure to infect a particular species of animal subcutaneously meant insusceptibility. He differed in this from the opinion expressed by Dutton, Todd, and Kinghorn. There were difficulties in establishing the identity of various species, and many factors had to be relied upon. It was now definitely established that a fly once infected remained so for the rest of its life. The question of the transmissibility of any species of trypanosome by any species of *Glossina* also requires solution, and many experiments now favoured the view that this was the case. It was now recognized that *Glossina morsitans* was also a transmitter of sleeping sickness. Professor Mesnil, in a paper on *T. gambiense* and *rhodesiense* (read by Dr. Fantham), detailed some experiments supporting the conclusion as to the individuality of these two species. A synopsis of a report by Drs. Kinghorn and York, of trypanosomes infecting swine and domestic stock in Rhodesia, was also read by the Secretary. It was found that at least 37.5 of the local fauna were infected with various forms of trypanosomes, and that double infections were not uncommon. An interesting and instructive paper on the pathology and histology of trypanosomes, by S. B. Wolback and C. Bruger, Boston,

was read by the President, and illustrated by a series of excellent lantern slides showing the distribution of trypanosomes in various tissues and the lesions which resulted. In the short discussion which followed, Professor Todd discussed the specificity of the two forms of pathogenic organisms, and spoke of the difficulty in defining the characters which should be considered as determining the specificity, and what variation should be considered as constituting a specific difference. Dr. Weinberg (Paris) read a paper on verminous toxins; he had been able to prove that ankylostomes and sclerostomes secreted a toxin which he had obtained in a pure form from the peri-enteric liquid of the parasite. According to his view, helminthiasis was an intoxication, acute or chronic, produced by toxins secreted by the parasite, and microbic and mechanical lesions were of the nature of secondary complications. Dr. Leiper (London) thought that Dr. Weinberg had indicated a new line of investigation. Dr. F. Law (Trinidad) expressed the opinion that clinical phenomena in helminthic diseases were frequently due to toxic absorption, and drew attention to various lesions in ankylostomiasis which might be attributed to the action of toxins. A short note on blood determination in Kautagama's disease by Deputy Inspector-General Bassett-Smith; and a note on copra itch, by Dr. Aldo Castellani (Ceylon), concluded the morning's work.

A MEMORIAL TO LORD LISTER.

THE Presidents of the Royal Society and the Royal College of Surgeons some weeks ago took the necessary steps for the formation of a large and representative Committee for the purpose of establishing a memorial to the late Lord Lister, and a committee was appointed to carry the project into effect. This Committee met on July 22nd at the rooms of the Royal Society, under the chairmanship of Sir Archibald Geikie, President of the Society. Among those present were the Portuguese Minister, Sir Thomas Barlow, Sir Rickman J. Godlee, Dr. J. A. Adams (President Royal Faculty of Physicians and Surgeons, Glasgow), Sir Henry Morris, Sir John Tweedy (Medical Society of London), Professor A. Crum Brown, F.R.S. (President, Linnean Society), Sir William Osler (University of Oxford), Professor W. Thorburn (University of Manchester), Mr. Dennis J. Coffey (National University of Ireland), Right Hon. Sir Joseph Dimsdale (Master of Grocers' Company), Mr. D'Arcy Power, Dr. Hale White, Viscount Iveagh, K.P., the Master of the Rolls, the Dean of Westminster, the Lord Provost of Glasgow, Sir R. Douglas Powell, Sir W. Watson Cheyne, Admiral Sir John Durnford, Surgeon-General Sir A. M. Branfoot, Sir Donald MacAlister, Sir John Rose Bradford, and Mr. Edmund Owen. On the motion of Sir Joseph Dimsdale, seconded by Sir Douglas Powell, the following were appointed an Executive Committee to recommend to a future meeting of the General Committee a scheme for the memorial to Lord Lister, and to organize an appeal for subscriptions: The Archbishop of Canterbury, the Lord Chancellor, Viscount Iveagh, Lord Rayleigh, Lord Rothschild, Lord Alverstone, the Dean of Westminster, the Lord Mayor of London, the Lord Provost of Edinburgh (Sir W. Brown), the Lord Provost of Glasgow (Mr. D. M. Stevenson), the Master of the Rolls, the Right Hon. Lewis Harcourt, M.P., Sir Thomas Barlow, Sir W. Watson Cheyne, Sir Rickman J. Godlee, Bart., Sir Henry Morris, Sir Archibald Geikie, Sir Donald MacAlister, the Hon. Sir Charles Parsons, Sir William Turner, Sir J. Wolfe Barry, Sir John Rose Bradford, Sir Alfred Pearce Gould, Sir Alfred Kempe, the Hon. W. F. D. Smith, Frederick Morris Fry, and Mr. Edmund Owen. On the motion of Sir Donald MacAlister, seconded by Sir James Dewar, the Right Hon. Lord Rothschild and Sir W. Watson Cheyne were appointed Treasurers, and Sir John Rose Bradford was appointed Secretary of the Lister Memorial Committee. A meeting of the Executive Committee was held later, at which the following members were present: Sir Archibald Geikie (Chairman), the Hon. W. F. D. Smith (Deputy Chairman), the Viscount Iveagh, the Dean of Westminster, the Lord Provost of Glasgow, the Master of the Rolls, Sir Thomas Barlow, Sir W. Watson Cheyne, Sir Rickman J. Godlee, Sir Henry Morris, Sir Donald MacAlister, Sir John Rose Bradford, Sir Alfred Kempe, Mr. F. M. Fry, and Mr. Edmund Owen. Proposals for a memorial of an international character were considered, and arrangements made for a public meeting in furtherance of the objects of the memorial, to be held at the Mansion House in October, at which details of the scheme will be announced. Communications for the Treasurers or the Secretary may be addressed to the Royal Society, Burlington House, London, W.

MEDICAL TERMS IN THE NEW ENGLISH DICTIONARY.*

THE third quarterly section of the *New English Dictionary* for 1912 carries the alphabetical rubrics from Sleep to Sniggle, and between these words, as it happens, there are remarkably few strictly medical terms. With the exception of small-pox, smegma, smilax, and sleeping sickness, and perhaps slough, the 127 three-columned pages of the present part are bare of medical words. The only addition to this list which suggests itself to us is Snellen's types, but that is probably excluded as non-naturalized or too much of an eponymous term. Although few in number the words are interesting enough. There is small-pox, for instance, which used to appear as "smallpockes," and was then commonly construed as a plural, a fact which accounts for such expressions as "he had the small pox so much that he was for a time blinded with them." It was for a long time written as two words, with no hyphen, the adjective being employed to distinguish the disease from the pox proper, or great pox. Even now we use the word as signifying either the pustule of the malady or the disease itself, and we place the article before it sometimes and at other times omit it. Small pock, with or without the hyphen, is a rare or obsolete term. Smegma is given as a word not yet naturalized; in Greek it signifies a detergent, soap, or unguent; and it is, of course, specially applied to the sebaceous secretion found under the prepuce. It has also been used for the matter often found in the morning on the lacrymal caruncle and for the sebaceous material on the skin of the new-born infant (more often known as vernix caseosa). Associated words are smectic, meaning detergent, smectis, and smectite, a kind of fuller's earth, and smegmatic, a cleanser. Sleeping-sickness, or sleeping-evil, had once a much wider meaning than that which it now possesses; it was at one time called the sleepy sickness. Smilax is a Greek word, meaning bind-weed; it is now the name given to a species of the large genus of liliaceous plants, which constitutes the sarsaparilla of commerce. A medical writer in 1671 said about it, "it opens the belly and dissolves hard swellings," whilst a non-medical author of some years later said it was one of "the vegetables that Bacchus delighted in." Slough is not, of course, a distinctly medical word, yet it has, both as noun and verb, a very well defined pathological and surgical signification. It is, perhaps, related etymologically to the Low German sluwe, husk, peel, or shell. If there are not many purely medical terms in this part of the *Dictionary*, there are many common words which have medical shades of meaning, and these are all very carefully placed, defined, and illustrated. Let us take, for instance, the word "slow"; it appears with the meaning of "tardy" in the phrase "slow pulse," and with that of "not acute or not rapidly developing into a serious form" in the term "slow fever." Again, there is sluggish, with its two medical meanings of not readily moving (sluggish liver or pulse) and of slow in responding to treatment (sluggish ulcer). The *Dictionary*

* *A New English Dictionary on Historical Principles. Sleep-Sniggle.* Vol. ix. By W. A. Craigie, M.A., LL.D. Oxford: At the Clarendon Press, Henry Frowde. Double section. July 1st, 1912. Price 5s.

is always admirable in its fullness in the matter of defining the medical uses of ordinary words. There are some interesting obsolete medical terms. There is the mysterious slibber-sauce, which is defined as "a compound or concoction of a messy, repulsive, or nauseous character, used especially for medicinal purposes"; we can well believe it, it sounds nasty. There is slink, an abortive or premature calf or other animal, also the skin or meat obtained from such an abortive animal. The verb (slink) may mean to bring forth young prematurely or abortively, and it is related in some way with sling. Curiously enough the very next word, slip, also means an abortion or to abort, for example, a cow slipping her calf. When we add that under slippery, we find "slippery elm bark" noted, it will be apparent that it is not easy to find omissions in the *Dictionary*.

DOCTORS IN INDIA.

How large a share members of the medical profession have taken in the establishment and expansion of our empire is not generally known, or perhaps we should say, acknowledged. Medicine has been among the greatest influences in the spread of civilization. In all our colonies doctors have at various times taken a very active share in public life. We need only mention South Africa, where Sir Leander Starr Jameson has played so conspicuous a part; Canada, where Sir Charles Tupper, who a few days ago entered on his 91st year, has been Prime Minister, besides holding many other Cabinet offices; Sir John Kirk, who has been Political Agent and Consul-General at Zanzibar; Sir James Logan Campbell, for many years a political leader in New Zealand; China, with which the names of Sir Rutherford Alcock, Sir Halliday Macartney, and Sir Robert Bredon are closely associated; and Sir William MacGregor, now Governor of Queensland, and formerly of Lagos and Newfoundland. But it is in India that doctors have played the most varied parts. It is to Gabriel Boughton, surgeon of the *Hopewell*, that we owe the first charter for English trade in Bengal, and it was through William Hamilton, another surgeon, that the East India Company got the lands of Calcutta and the surrounding country. The *Indian Medical Gazettee* for June contains an article of great interest, entitled, "What the Indian Medical Service has done for India." Passing over achievements in the purely medical sphere, and in botany, zoology, and geology, doctors have done memorable work as explorers, political agents, economists, educationists, philologists, ethnologists, and historians. We can mention only a few names. Alexander Hamilton, who accompanied George Bogle on his mission to Tibet in 1774, was one of the first British subjects to visit the forbidden city of Lhasa. Mungo Park, the famous African explorer, was for some time a medical officer in the East India Company's service. J. Z. Holwell, the hero of the siege of Calcutta, and the historian of the terrible episode of the "Black Hole," was a member of the Indian Council, and succeeded Clive as temporary Governor in 1760. Joseph Hume, the once famous Radical M.P., began life as a surgeon in India. Henry Walker Bellew served as Chief Political Officer at Kabul during the second Afghan war in 1878–79, and Sir George Scott Robertson, M.P., was the first European to explore Kafiristan, and was agent in Chitral during the war of 1895. Sir George Birdwood, who joined the Bombay Medical Staff in 1854, was afterwards Curator of the Indian Museum and Special Assistant in the Commerce and Statistical Department of the India Office. To medical men is due the creation of the Forests, Post Office, Mints, Geology, and Telegraph Departments in India. Alexander Gibson was appointed Conservator of Forests in 1847. In 1852 McClelland was appointed Superintendent of Forests in the newly acquired province of Lower Burma; H. F. Clarke Cleghorn was Conservator of Forests, and was the author of works on the forests and gardens of South India, and on the forests of the Punjab and Western Himalaya. John Lindsay Stewart was Conservator of Forests in the Punjab from 1864 till his death in 1873. Francis Day was Inspector-General of Fisheries. Sir William Brooke O'Shaughnessy conducted the first experiments for the introduction of the electric telegraph into India, and was appointed Director-General of Telegraphy in India in 1852, a post he held till his retirement in 1861. James Ranken was Postmaster-General of the North-West Provinces from 1841 till his retirement in 1845. George Paton was Director-General of the Post Office in India from 1861 till he retired in 1864. Elijah Impey was Postmaster-General at Bombay from 1856 till his death in 1868. In education doctors have been prominent. Thomas Alexander Wise founded Hughli College, of which he was first Principal; in 1839 he was appointed Secretary to the Committee of Education, a post corresponding to the present Directorship of Public Education. James Esdaile succeeded Wise as Principal of Hughli College and was subsequently Principal of Dacca College. John Peet was Inspector of Education in the Bombay Presidency from 1856 to 1861. The Assay Department of the Indian Mint has from the beginning to the present day been officered and worked almost wholly by members of the Indian Medical Service. Before the creation of the Veterinary Department most of the work relating to diseases of animals was done by officers of the Indian Medical Service. K. McLeod wrote a *Manual of Diseases of Cattle* which was translated into Bengali. At his suggestion, a grateful patient, Raja Sheo Baksh Bagla, gave the site for the veterinary hospital and school at Belgachia with 30,000 rupees for its erection. In philology, ethnology, and literature, several doctors have done excellent work, the three most distinguished scholars being John Leyden, the friend of Walter Scott, Horace Hayman Wilson, who after his return to England was appointed Boden Professor of Sanskrit at Oxford, and Aloys Sprenger, who is said to have known twenty-five languages. To Indian ethnology and history many valuable contributions have been made by medical officers. Enough has been said to show the wide range of activity of doctors in India outside their professional sphere of work. Their brethren have every reason to be proud of them.

THE PHYSIOLOGY OF THE POET.

WE have received the following communication from Dr. David A. Alexander of Bristol: "Signor Patrizi, upon whose recondite studies you descant (BRITISH MEDICAL JOURNAL, June 29th, 1912, p. 1499), will interest us if he go on from the orator to the iatro-mathematics of the poet. Versification and its plastic measures and modes, why are they so agreeable to us? 'The rhythmising instinct in verse is merely one clause of a law which runs through every manifestation of energy, so universal, that it would appear as if the great heart of Nature beat with a regular systole and diastole' (More, *Shelburne Essays*). Aristotle refers the imitative faculty and the instinct for rhythm or harmony to the depths of our nature. Is it not probable, however, that respiratory rate is that which directly underlies verse? Without employing a stethograph any one may prove to himself that the hexameters he recites in a given time are the number of his respirations. Conversely, the standard of man is the way he breathes and utters himself; and is highest as fixed by Virgil, wielder of the stateliest measure ever moulded by the lips of man." It was stated in the article to which Dr. Alexander refers that Signor Patrizi had already applied what Thomas Campbell calls the "cold material laws" of science to one of Italy's greatest poets. His method of dealing with Leopardi brought a storm of angry criticism about his ears. We have not had the advantage of seeing the book, and cannot therefore give any details. Mary

Hallock-Greenewalt, in a reprint from *Poet Lore* for June, 1905, which she kindly sent us, says that one who was at once a great poet and a great musician has shown by scientific analysis that "poetry in such things as music is made of accent, rhythm, tone-colour, intensity, and pitch; all are present in spoken verse." "Some of them," she adds, "as every musician knows, can be measured by mathematical accuracy; some of them cannot." We gather that in the lady's opinion it is the pulse that determines the rhythm of verse. "Physiologically speaking," she says, "imagine the heart of the living world laid bare. Keep in mind the 'exaltation of function' it throws regularly into every one of its parts, and this on an average of seventy-six times a minute. Conceive, if you can, the force with which it pumps a circuit of life through the butterfly, through the panther, so fast, so steadily as seconds are ticked by the clock. See how recurrently it buffets the brain. Is it strange if, with such vigorous instruction, the heart should have taught the head regular recurrence?" She sums up her thesis in the conclusion that "with a lub dub, lub dub, lub dub, every long poem and nearly every important short poem in the English language is written." A German writer has propounded the question why there is so much poetry that deals with drinking and so little that deals with eating. The answer given by Mary Hallock-Greenewalt is that the stimulus of drinking increases the force of the heart's action. "Out of the mouth the heart speaketh." We must leave the physiologists to settle whether it is the poet's respiration rate or his pulse beat that determines the "proud full swell of his great verse"; *non nostrum tantas componere lites*. It has been said that music and sweet poetry agree "as they must needs, the sister and the brother"; and Carlyle says a man may have the poetic gift, but may fail of utterance for lack of a music master in his boyhood. On the other hand, many poets have been indifferent to music, while the most skilled musician among them all, Browning, wrote the most rugged verse. The physiology of the poet yet remains to be written. Cabanis is credited with the opinion that poetry is a disease of the small intestine; and we know the figurative sense in which the word "bowels" is often used in Holy Writ. The fierce indignation which makes verses doubtless often has its origin in the liver, which used to be regarded as the seat of the passions. All this leaves the question pretty much where it was. When the physiologist has applied all his apparatus to the poet, the secret of his inspiration will, we fear, still remain hidden.

THE SPECIFIC INFLUENCE OF X RAYS ON MYOMATOUS TISSUE.

IT is usually assumed that *x* rays exert a curative influence on myomata of the uterus by acting on the ovaries, causing them to degenerate. There is no doubt that *x* rays have a specific action on the ovaries, but gynaecologists have generally denied that they act directly on the cells of myomatous tumours of the uterus. E. Gräfenberg considers that the only way to determine the question is to have regard to cases in which *x* rays are employed for uterine myomata when the ovaries are no longer functioning. He relates the case of a patient 60 years of age, in whom the climateric had occurred ten years previously.[1] The uterus was continuous with a hard, irregular tumour, which extended as high as the umbilicus. Anteriorly there were two subserous myomata of the size of a hazel nut. Another myoma of the size of an apple was lying in Douglas's pouch. In nine weeks, in response to *x*-ray treatment, the large myoma had disappeared, and after fourteen weeks, that in Douglas's pouch, as well as the two smaller ones, could not be felt. He considers that the total disappearance of these myomata as a result of *x*-ray treatment cannot be ascribed to the indirect effect on the ovaries, since these organs were undoubtedly incapable of exercising an influence on the growth of myomata after having ceased to be functional for ten years. He therefore comes to the conclusion that the rays acted directly on the myoma cells. In his opinion the fact that removal of the ovaries often fails to cause shrinkage of myomata, whereas *x* rays usually succeed, speaks in favour of a combined direct and indirect action of the *x* rays in those cases in which the ovaries are still functional. He holds that the *x* rays have a specific affinity for sarcoma cells and other connective tissue elements, and therefore finds nothing surprising in the existence of a similar affinity for myoma cells.

[1] *Berl. klin. Woch.*, April 29th, 1912.

PROPOSED FORMATION OF RHODESIAN BRANCH

A MEETING was held at Bulawayo, on May 21st, 1912, at which there were present Dr. Copeland of Essex Vale, Dr. Major Martin of Plumtree, Dr. Smyth of Selukwe, and Drs. Acland, Head, Jameson, Strong, and Townsend of Bulawayo. Dr. Smyth was voted to the chair. Dr. Jameson reported that all the doctors in Bulawayo had expressed themselves in favour of a local Branch being formed, and signified their intention to join. Letters were read from Dr. Darton (Bushtic Mine), Dr. Nielson (Antelope Mine), Dr. Macdonald of Inyati, Dr. Maitland of Cwelo, Dr. Ritchie Brown of Umvuma, Dr. Donaldson of Selukwe, Dr. James Davey of Que Que, and Dr. Wyndham of Bulawayo, approving the idea and regretting inability to attend. The Chairman addressed the meeting on the desirability of the doctors in Rhodesia forming a Branch of the British Medical Association. Later a dinner was held at the Grand Hotel to celebrate the birth of the society. Dr. Macdonald proposed the health of the Branch, coupled with the name of Dr. Smyth, the founder, who suitably replied.

CAMBRIDGE RESEARCH HOSPITAL.

WE are informed that a medical friend who wishes to remain anonymous has just offered to give £150 a year for a period of three years for a research scholarship in connexion with the Cambridge Research Hospital. Mr. Strangeways will be pleased to give particulars to any qualified person who will apply to him at the Research Hospital, Department of Medicine, University of Cambridge. We call special attention to the fact that all three of the research scholarships attached to the hospital have been given by medical men, and nearly all the money subscribed has come either from or through members of the profession. We commend this significant fact to the serious attention of the politicians who are trying to misrepresent the profession before the public as carrying on a war against an ill-considered measure solely for the promotion of their own pecuniary interests.

We understand that the Council of the Royal Society of Medicine has taken steps to form a Section of Ophthalmology and a Section of Tropical Medicine. It is hoped that both these sections will be ready to begin work at the beginning of the next session. It may be well to emphasize the fact that in the formation of these sections nothing antagonistic towards existing societies for the study of these subjects is intended. The Ophthalmological Society, as stated in the BRITISH MEDICAL JOURNAL, at a special meeting held on July 20th (p. 154), passed a resolution to the effect that it viewed with sympathy the proposal to form an Ophthalmological Section of the Royal Society of Medicine, and leading members of both societies are co-operating in the formation of the new sections. In the case of new Fellows who join these sections within the next six months the Council has, we are informed, decided to remit the Fellows' admission fee.

Medical Notes in Parliament.

The National Insurance Act.

British Medical Association.

MR. BOOTH asked the Secretary to the Treasury if he had investigated the circumstances connected with the boycott of Dr. Richards, of Winkleigh, North Devon, and the present condition of his practice and the service of the friendly societies which it included; and what arrangements the Insurance Commissioners intended to make for medical service for such societies if the British Medical Association forbade a practitioner to serve the clubs in question.

Mr. Masterman said that he had nothing to add to the statements made by his right hon. friend the Chancellor of the Exchequer in reply to questions by the hon. gentlemen and others on May 15th. The medical service referred to was not service under the Act, and the Insurance Commissioners had no power to intervene.

Invalided Soldiers and Sailors.

Mr. Pike Pease asked whether a soldier or sailor invalided out of the army or navy after several years' service, who was unable to join an approved society, would have to wait at least three months before being able to obtain any benefits from the Army and Navy Insurance Fund; and, if so, could the Commissioners see their way to remedy this hardship.

Mr. Masterman replied in the negative; a soldier or sailor invalided out of the army or navy would at once be entitled to benefits out of the Army and Navy Insurance Fund after proving that the state of his health was such that he could not obtain admission to an approved society. The Commissioners were now endeavouring to arrange that where a soldier or sailor was discharged in such a state of health that he would clearly be unable to join an approved society, he might be at once admitted to the Army and Navy Insurance Fund on a certificate from the army and navy doctor.

Sanatorium Benefit (Wiltshire).

Mr. Godfrey Locker-Lampson asked the Secretary to the Treasury whether it was estimated that there would be any difference in Wiltshire during the first year of the operation of the National Insurance Act between the amount for sanatorium benefit provided for under the Act and the amount which would actually be allocated to Wiltshire according to the Memorandum No. 112, I.C., recently issued by the Insurance Commissioners; and, if so, whether it was estimated that the actual amount to be allocated to Wiltshire would be less than that provided for under the Act. Mr. Masterman answered that the Act did not provide for any definite allocation of funds for sanatorium benefit for the period from July 15th to the end of the present year, to which alone the allocation proposed in the memorandum applied. The allocation for the first full year after the commencement of the Act would be made in January next, in accordance with the provisions of Sections 16 and 61. He thought the funds would be sufficient, but in any case £220,000 was set aside up to November, and if more was required more would be set aside.

Tuberculosis (Supplies of Cod Liver Oil).

Mr. Fell asked if insured persons suffering from tuberculosis could now obtain supplies of cod liver oil, and, if so, to whom should application be made; and would this benefit be given to Post Office contributors who could not get accepted by an approved society. Mr. Mastermann replied that an insured person suffering from tuberculosis should apply to the local Insurance Committee, who would arrange for treatment suitable to his condition. Sanatorium benefit was not limited to members of approved societies, but could be given by the local Insurance Committees to any persons insured under the Act.

Midwives.

Mr. Rowntree asked whether, under the National Insurance Act, a midwife must be insured whilst she was in attendance on a maternity case. Mr. Mastermann replied that the Commissioners were advised that a midwife who undertook a case on her own account, without any understanding that she should work under a doctor, was not employed under contract of service. In these circumstances she need not be insured.

County Asylum Attendants.

Viscount Wolmer asked the Secretary to the Treasury whether he was aware that up till now attendants in Lancashire county asylums have been entitled to full wages and board when ill, with a pension upon retirement; whether he would therefore instruct the Insurance Commissioners to exempt them from the operation of the National Insurance Act; and whether, in the event of the terms of their employment being altered in order to bring them within the scope of the Act, the Insurance Commissioners would refuse to countenance such a proceeding.

Mr. Masterman said that no formal application for exception of this class of persons had yet been received, and the Insurance Commissioners could not, of course, give a certificate until this was sent. As regards the latter part of the question, the terms of employment, apart from any statutory rights employed persons might possess, were a matter of contract between employer and employed, and the Commissioners would have no right to intervene.

Medical Insurance (Germany).

Mr. Watt asked what was the figure per head of insured persons paid to medical attendants under the German Insurance Acts; and whether that sum included drugs or not.

Mr. Masterman said that he was informed that the average cost to the German sickness insurance societies of medical attendance, exclusive of medicine, was, in 1910, 5s. 10¼d. per member. These charges included in some cases the treatment of dependants as well as of insured persons. He agreed that the bare mention of the figures as between the German and English system would not be satisfactory to form a fair comparison. The cost of drugs he would inquire about.

University of London.—Mr. Rowlands asked the President of the Board of Education whether his attention had been called to the resolution recently passed by the London County Council to the effect that the University of London should continue to confer degrees on all British subjects in all Faculties other than medicine on the results of examinations alone; and whether, in view of the hostility to external examinations exhibited by members of the Royal Commission on University Education in London, he would represent to that body, on behalf of his Board, the need there was for continuing the external examinations which had made the reputation of London University. Mr. J. A. Pease said he understood that such a resolution was recently passed by the London County Council. The Government clearly could not make representations to the Royal Commission appointed on their recommendation to advise the Crown upon various questions connected with the University of London. He should add that he must not be taken to accept the statement of the attitude of the Commissioners contained in the second part of the question.

The Mental Deficiency Bill.—The debate on the second reading was resumed on Friday, July 19th, when Mr. Wedgwood moved that the bill be read a second time "this day six months." He did so on the ground that it violated the principle of the liberty of the subject. Under it persons who had committed no crime could be imprisoned for life. Sir Frederick Banbury said the bill would give the Home Secretary excessive power; he would be able to lock up a person as mentally defective and have no more trouble about him. Mr. Goldsmith objected to the creation of a new department and a new staff of officials; he thought that one Board should deal with all mentally deficient persons, as recommended by the Commission. After some speakers had further criticized the bill, Lord Robert Cecil urged that to say broadly that a mentally defective person was not fit to be a parent was going very far. Mr. Hume Williams criticized the finances of the bill as inadequate; £150,000 allocated for dealing with defectives was ludicrously insufficient. Mr. Ellis Griffith, speaking on behalf of the Government, defended the bill. After some other speeches, the House divided, and the second reading was carried by a majority of 223. Only 19 voted against it. An attempt was made to send the bill to a Committee of the whole House, which was defeated by a majority of 175. The bill will be referred to a Standing Committee.

England and Wales.

[FROM OUR SPECIAL CORRESPONDENTS.]

LONDON.

London County Council.

Medical Inspection and Treatment of School Children.

THE results of the conference between the Board of Education and the London County Council (BRITISH MEDICAL JOURNAL, May 25th, p. 1212) as to the future basis of medical inspection and treatment in London were reported by the Children's Care Committee to the Education Committee of the Council on July 17th.

The Care Committee stated that the Board contemplated that the Council's scheme would continue composite in character, and might properly continue to include:

1. Hospitals with which the Council would have agreements on the basis of that now in operation at the London Hospital, where the special arrangements practically constituted a children's treatment centre within the hospital.
2. Voluntary institutions of various kinds, other than hospitals, with which the Council would have agreements.
3. Medical treatment centres conducted on the lines of those now opened at Norwood and Wandsworth, but with certain modifications.

It was understood that the grounds upon which the Board considered such modifications necessary were:

(*a*) That the centres as at present constituted were not sufficiently in touch with the Council's system of medical inspection.
(*b*) That the centres were not sufficiently under the direct supervision of the Council.
(*c*) That they were not available for the further examination of school children referred by the inspecting medical officer, or for the examination of special cases referred by the school nurse, school attendance officer, head teacher, or care committee.
(*d*) That they were not available for the treatment of minor ailments.

The modifications suggested by the Board for the Council's consideration were:

1. The medical staff should be nominated by the committee of local medical practitioners, but appointed by the Council, or, at all events, selected by them for appointment.
2. Whether a centre was or was not owned or rented by a committee of local medical practitioners, the administrative control and supervision of the work in the centre should be vested in the Council.
3. The centres should be available for use in connexion with the Council's system of medical inspection of school children, for the further examination of children, and should provide for the treatment of minor ailments. It was, in the Board's view, essential that provision should be made at the treatment centres for the treatment of minor ailments. The Board recognized that there would be particular treatment centres at which, owing to the exceptional circumstances, such provision would not be required, but it considered that the inclusion of such provision should be the normal arrangement.

The Children's Care Committee stated that generally it acquiesced in these views.

In connexion with any arrangements that might be made with hospitals, the Board stated that it was prepared to regard as satisfactory arrangements such as were in operation at the London Hospital; the arrangements in force at certain other hospitals, which differed not only in degree, but in kind, could not be regarded as satisfactory. If these could be modified so as to bring them into line with the arrangements at the London Hospital, the Board would be prepared to regard them as a satisfactory part of the Council's scheme of treatment; but, failing this, it looked forward to a gradual transfer of the work done at these hospitals to other hospitals where the arrangements were of the London Hospital type, or to medical treatment centres, or to school clinics of various types.

The Board reminded the Council that the problem of the medical treatment of school children could not yet be said to have reached a final solution; that the methods of such treatment were undergoing at the present time somewhat rapid evolution; and that it should, therefore, be clearly understood that the views set out above could only represent what the Board regarded as a reasonably satisfactory way of dealing with the needs of the area at the present time and in the near future.

In dealing with the questions raised by the Board, the Children's Care Committee stated that it would shortly have under consideration the question of the possibility

(1) Of establishing, in connexion with hospitals with which the Council had agreements, a system which would produce the same results as were obtained at the London Hospital; and (2) of making arrangements for reinspection and re-examination of children and the treatment of minor ailments in connexion with certain hospitals with which the Council at present had no agreement.

As regards the medical treatment centres, it would be noticed that the three important respects in which provision was to be made were:

(1) Treatment for affections of the eye and ear, nose, and throat, involving operations, and ringworm cases; (2) the reinspection and re-examination of children; and (3) treatment for minor ailments.

With reference to (1), the Council had already determined the main terms and conditions under which such treatment should be given; but the Committee made further proposals which it thought would meet the additional requirements of the Board.

With regard to (2), it would be possible to arrange with the committees of local practitioners for the centres to be available for use by the Council in connexion with the medical inspection of school children and for the re-examination of children.

The Committee suggested that minor ailments should include discharging ears, external eye diseases — for example, blepharitis and conjunctivitis, skin diseases such as impetigo and sores, and such other conditions as required the daily services of a nurse. It was considered that one nurse working full time could deal with 1,100 cases a year, and that for this number the services of a doctor working on one-half-day a week at a cost of £50 a year would be required. A sum of £100 should be paid for nursing treatment in connexion with each centre. This would cover the services of a nurse at the centre, and also nursing treatment (including dressings, lotions, etc.) to be given in the homes of the children, and all necessary equipment and travelling expenses for the nurses.

For these cases, also, some allowance should be made having regard to the additional cleaning and wear and tear involved in a more extensive use of the premises provided by the local practitioners and to the supply by them of dressings, lotions, etc., for treatment at the centre. Moreover, the premises would be used for the purpose of reinspection and re-examination. This would involve their use on Saturday mornings, for which no provision had been made, and the Committee therefore suggested that a capitation payment of 4d. for minor ailments would be an equitable arrangement in respect of these extra services.

The Committee gave detailed particulars of the number of cases to be dealt with at the centres controlled by medical practitioners at Fulham, Hackney, Islington, Peckham, and St. Pancras, and at the Poplar school treatment centre for ear, nose, and throat affections, ringworm, and minor ailments. The estimated cost of the centres varied from £420 to £950 per annum. It was necessary that some provision should be made in the Lewisham district. It was not possible to arrange for a committee of local medical practitioners to provide a centre in Lewisham, unless a minimum of 1,760 cases was guaranteed, and as the Committee was not satisfied that it was possible to supply this number, it proposed, for the present, to accept an offer which had been made by the Home and Infirmary for Sick Children to provide treatment for 250 children a year suffering from ear, nose, and throat defects. The total annual cost would be £80. It was also proposed to accept an offer by the St. George's Dispensary, Blackfriars, to treat 440 ear, nose, and throat cases. The committee also submitted proposals for the treatment of eye cases at the Fulham, Hackney, Islington, Peckham, Poplar, and St. Pancras centres, and at the Home and Infirmary for Sick Children, Lewisham. The cost of these proposals varied from £55 to £300.

The annual cost of all the schemes described in the report would be £4,672, or £5,527 if the maximum number of cases was treated. The annual cost of the treatment of minor ailments at each centre would be £168 6s. 8d., made up as follows: Nurse and equipment, £100; doctor, £50; capitation payment, 1,100 cases a year at 4d. each,

£18 6s. 8d. The total cost at the eight centres would be £1,346.

The proposals of the Children's Care Committee were adopted without discussion.

London Water Supply.

We have received the report (dated May 1st, 1912) of Mr. C. Perrin, Water Examiner appointed under the Metropolis Water Act, 1871, on the condition of the London Water Supply during the month of January, 1912. He states that the mean rainfall during that month at twelve stations selected as giving equal representation for all parts of the Thames Basin, was 4.16 inches, being 2.04 inches above the average mean rainfall for that month during the previous twenty-nine years. The average daily natural flow of the Thames at Teddington Weir during the month was 4177.5 million gallons, being 2040.1 million gallons above the daily average for the two preceding years. The maximum daily flow was 6970.3, and the minimum 2442.0 million gallons. The average daily flow of the Lee at Feilde's Weir was 294.759 million gallons, the maximum daily flow 1152.828 million gallons, and the minimum 91.791 million gallons. The general rainfall of the whole valley above Feilde's Weir was 3.42 inches. The following table shows the sources from which water supplied by the Metropolitan Water Board during the month was obtained, the average daily supply from each source, and the relative proportions of the supply from each source:

District.	From the Thames.	From the Lee.	From Springs and Wells.	From Ponds.	Total Supply from all Sources.
Eastern	4,932,300	34,291,200	6,876,100	—	46,099,600
Kent	—	—	19,968,900	—	19,968,900
New River	11,523,700	21,306,600	11,425,500	188,200	44,444,000
Southern	55,401,200	—	594,200	—	55,995,400
Western	56,695,100	—	—	—	56,695,100
Supplies in bulk ...	1,021,355	—	129	—	1,021,484
Total	129,573,655	55,597,800	38,864,829	188,200	224,224,484
Percentage of total supply	57.788	24.795	17.333	0.084	= 100

The total number of supplies furnished during the month within the Water Board's area of supply was 1,105,627. The total supply divided by the number of supplies shows a daily average of 202 gallons for each supply.

Mr. Perrin gives in an appendix the Report on the results of the chemical and bacteriological examination of the London waters for the month of January by Dr. Houston, Director of Water Examinations, Metropolitan Water Board, and also an Advanced Report giving briefly the general chemical and bacteriological results for the month of February, 1912.

LIVERPOOL.

Maghull Epileptic Colony.

Ample evidence of the excellent work done at the Home at Maghull was afforded at the annual meeting of subscribers and friends held in the new hall on the Chapel House estate on Saturday, July 6th. Mr. Edward Lawrence presided, and there was a large attendance.

In presenting the annual report Mr. W. Grisewood, the Honorary Secretary and Treasurer, stated that the six homes of the institution were kept practically full. On December 31st, 1912, the inmates comprised 171 males and 140 females (80 children). At the end of the year there were 53 applications for admission in excess of the vacancies. The financial statement for the year was satisfactory, and £2,900 was passed to the estate account. It was hoped (assisted by the promise of a substantial contribution from one who in the past had already taken great interest in the institution) shortly to complete the cost of the proposed home for females at the Chapel House estate. During the last month of the year 74 patients had no attacks; the total number of attacks recorded during 1911 was 36,509, nearly 1,000 less than the previous year with the same number of patients. At the homes patients had the greatest possible security with the greatest possible liberty, and the immunity from injury proved that the liberty was justifiable.

The Chairman, in moving the adoption of the report and accounts, said the work had gone on quietly and steadily. Reliance was placed first on good medical treatment, nursing, and watchful care; secondly, on occupation for the colonists, who realized that this and exercise were essential for their improvement. Excellent provision was made for the education and training of the children in the Chilton Home, and adults were provided for in the evening schools during the winter. Ample provision was also made for the recreation and entertainment of the patients. By the erection in the grounds of the third class home for females, the colony would reach its limit in regard to the number of patients. Dr. Alexander spoke of the necessity for the patients to come to the home early. Of those who were ill less than ten years 12 per cent. were cured, of those who were treated within one year from the onset of the disease 15 per cent. were cured. He hoped that the Maghull Home, which dealt only with sound epileptics, would not come under the Government bill for the feeble-minded, as the managers had no wish that the institution should be classified with lunatic asylums.

Ireland.

[FROM OUR SPECIAL CORRESPONDENTS.]

National Insurance Act.

Now that the National Insurance Act has come into force reports come from various parts of Ireland of local bodies who object to the Act, and either refuse to work it or claim exemption from it. At a meeting of the Managing Committee of the Cork District Lunatic Asylum strong condemnation of the Act was freely expressed, and the resident medical superintendent was instructed to demand the exemption, as the benefits already given to the staff were far in excess of those provided by the Act. It was finally decided not to have anything to do with the Act. At their last meeting the Chairman of the Joint Committee of the Richmond Lunatic Asylum, Dublin, submitted a report with reference to the negotiations between that committee and the National Insurance Commissioners in respect of the staff of the asylum. The Commissioners had agreed to their exemption, but stipulated that the Joint Committee should guarantee to give superannuation and sickness allowances to its staff to the value of not less than those provided by the Act. The Committee undertook to give £1 per week sickness benefit for three months to male officials and six months to female officials, and also provided for superannuation benefits. The Dublin Corporation has also claimed, and obtained, exemption in preference for a scheme of its own. The Dublin Joint Hospitals Committee has drawn up the following recommendations and forwarded them to the Boards of all the hospitals:

1. That all nurses and probationers should be insured under the Act.
2. That nurses insured under the Act should receive no pay from the hospitals during sickness.
3. That a register should be kept at each hospital of insured patients and the names of their societies for statistical purposes.
4. That the medical staff of the hospitals should understand that it is no part of its duty as such either to give medical certificates to those desirous of entering an insurance society, or certificates of sickness to those attending the hospital.

Proposed Public Medical Service.

In the *Irish Times* of July 5th a correspondent, signing himself "Outsider," suggested that the movement in favour of the establishment of a public medical service, or some analogous means of meeting the needs of the working classes, was not likely to be successful unless medical men unconnected with dispensaries organized themselves and strongly supported it. Medical men in Ireland, with the possible exception of those in Dublin and Belfast, fell into two unequal classes—dispensary medical officers and those who had nothing to do with dispensaries. The

interest of those two classes differed. The former might be strongly tempted to consent to accept a smaller capitation fee than that at present demanded, because such fees would in their case mean an increase of salary unaccompanied by a truly corresponding increase of work. The other class was not thus tempted, because, despite freedom in choice of a doctor, the capitation fees were not likely to come their way, owing to the circumstance that a compulsorily insured person would be able to obtain from a dispensary doctor a red ticket entitling him to free medical attendance, and also a certificate entitling him to the "additional medical benefits," which in Ireland constitute the whole of the medical benefit. On the other hand, if such person went to a non-dispensary doctor, he would get his "additional medical benefits," but would have to pay for his medical attendance.

THE FEEBLE-MINDED.

A statement regarding the proposed legislature for the mentally defective, with reasons why the "Mental Deficiency Bill" should be extended to Ireland, has been prepared by Mr. R. R. Leeper, Honorary Secretary of the Irish Division of the Medico-Psychological Association of Great Britain and Ireland. The growing sense of obligation to provide for the mentally defective who do not come within the scope of the lunacy laws is shown by the fact that there are at present three measures for the purpose before Parliament. All these measures were intended to apply to England only, but as the result of action taken by the Scottish authorities, Scotland has been included in the provisions of the Government bill. Ireland, however, is expressly excluded; yet Ireland stands in more urgent need of provision for the classes dealt with than either of the sister countries, there being no legal enactments affecting the mentally defective who are not lunatics, nor any means of dealing with them except the Stewart Institution, which is supported by voluntary subscriptions and cannot provide for more than 100; whereas in both England and Scotland legal provision is made and institutions exist for dealing with several of the classes. The report of the Royal Commission on the Care and Control of the Feeble-minded showed that Ireland is worse off than either of the sister countries, whether as regards the actual numbers of mentally defective persons relative to the population or as regards the proportion of those urgently in need of provision. It was estimated in 1906 that there were in Ireland 25,415 mentally defective persons outside of asylums, and that of these 66 per cent. were in need of immediate provision, as against 44½ per cent. in England and Wales and 34½ per cent. in Scotland. At a special meeting of the Medico-Psychological Association of Great Britain and Ireland, summoned to consider the matter, a resolution was unanimously passed urging the necessity of introducing modifications to the Government bill so as to extend its provisions to Ireland. Ireland has a special claim for generous treatment for the following reasons:

1. Emigration leaves an undue proportion of the senile feeble-minded class, who are mostly in indigent circumstances, and hence gravitate to workhouses and asylums.
2. The younger feeble-minded often find their way into State or State-aided institutions, such as prisons, inebriate and ordinary reformatories, and their removal from these would reduce expense to the State.
3. Consequent to some extent on the admission of such persons to the district asylums, the grant in aid, normally 4s., has been greatly reduced, and so a still greater burden has been thrown on the ratepayers.

Correspondence.

APPENDICITIS—AND QUICKNESS.

SIR,—You have indicated that you would receive a further reply from me in reference to the above subject. All I would say is that, although Mr. Paterson and Mr. Morton imply that I have departed from the original position I took up, I am satisfied that an unprejudiced perusal of what I have written will not bear out this charge. I stated distinctly that I think there is too much surgical interference at the wrong time in acute appendicitis, and that it is responsible for a higher death-rate than we should have. My reasons for this opinion I have given in my communications, and as it does not make a thing plainer to say it twice, I do not propose to repeat them. If this correspondence leads to a full discussion at the Medical Society of London on the rôle of surgery in acute appendicitis, it will have done good, as the subject undoubtedly needs further consideration.—I am, etc.,

Glasgow, July 21st. GEORGE THOS. BEATSON.

ARTERIO-SCLEROSIS IN RELATION TO BLOOD PRESSURE.

SIR,—Owing to pressure of work I have only just read Dr. Oliver K. Williamson's courteous letter in the JOURNAL of July 6th dealing with a case quoted by me in your issue of June 15th. I think that if Dr. Williamson would read my notes through once again, he will see that my conclusions practically agree with his. After quoting the result of treatment in a case of high blood pressure, I concluded by saying:

> I think this case conclusively proves that the high arterial pressure was due to arterial spasm, and not to the atheroma and sclerosis of the arterial walls.

Dr. Williamson, commenting on this case, says:

> The high reading of 220 mm. in Dr. Thorne's case was probably not solely or even chiefly due to blood pressure, but was the resultant of blood pressure *plus* resistance of the arterial wall, the latter being due to spasm of the muscular coat; and the marked fall of the reading to 120 mm. resulting from Dr. Thorne's therapeutic measures was caused in great part by the relaxation of the spasm and the coincident diminution in resistance to the arterial wall, whereas the actual change of arterial blood pressure was but a small part of the difference between the two readings.

My chief object in publishing my case was to differentiate between localized atheroma or arterial sclerosis and arterial spasm due to contraction of the muscular coat, the latter, in my opinion, being the principal cause of increased arterial blood pressure.—I am, etc.,

Woking, July 17th. R. THORNE THORNE.

THE ARRIS AND GALE LECTURES ON SHOCK.

SIR,—I am gratified that Mr. Tyrrell Gray and Dr. Leonard Parsons should have sent such a full reply to my criticism. It obliges me, however, to ask for further space, a request which the importance of the subject will also justify.

When we learnt Euclid we started with definitions and axioms; then came the laying down of a proposition, then the proof, and finally the triumphant Q.E.D. Thus we knew all along exactly our position and our destination. I do not mind confessing—for I am not singular in this respect—that in reading the lectures as they appeared I did not always find myself in this happy condition. Even on a reperusal, when explanations have been given, one has now and then to stop and consider in what sense some familiar term is used. I fear the authors may have hindered the reception of their views by trying to reform the language in accordance with them.

My simile of the intoxicated man was, of course, intended as a *reductio ad absurdum*, to show what may happen when a word is applied in an unusual sense. But the serious way in which it has been taken suggests that the authors, if writing on alcoholism, *would* describe a normal man as intoxicated after he had drunk his first glass. The literal and scientific accuracy of the epithet would not prevent it from being libellous and perplexing!

As regards the worth of pressure tracings, I think any one who may care to make a comparison of my comments with the part to which they refer will acquit me of misrepresenting the authors' views.

As to feeling the pulse, I am very far from imagining that I can thus adequately detect vasomotor variations. Perhaps I ought to have written, "During operations, there often occur variations *so considerable* that they may be detected even by feeling the pulse, which yet do not prove of appreciable pathological significance."

My remark as to the state of the heart was called forth by the apparent lack of attention throughout the consideration of pressure tracings to this very important factor. It is mentioned (p. 939) that the blood pressure varies with increased cardiac output, but, curiously, not that it also varies with diminished cardiac output. If the heart is crippled—whether poisoned by excess of chloroform, dilated from respiratory obstruction, affected by some general disorder such as anaemia, the seat of degeneration,

etc., or merely fatigued — it will be apt to fail to respond when the additional task of overcoming arterial constriction is thrown upon it, especially if this be marked or sudden. Consequently a blood pressure which with a normally working heart would be or remain high, will instead be or become low. I would suggest that in this way may be partly explained the drops in Charts 21, 24 (end), 28, 37, 38, 16 *a b*, 52, although I do not wish it to be at all supposed that I exclude other factors, such as those discussed on p. 943.

Diagram I, representing the effects of various blocks on the access of peripheral stimuli to important centres, shows anaesthetics as cutting off stimuli from certain cerebral centres only, and ignores their action in diminishing or modifying stimuli from the peripheral parts of the body. Their effects on nervous structures in general (as I wrote, not on "the tissues," although the latter may include the former) are by no means "foreign to the immediate argument"; these might have been represented by broken lines or circles in addition to the closed line A—B. (See Report of British Medical Association Chloroform Committee, p. 23 and elsewhere.) The vasomotor centre itself (although the most resistant) and its immediate connexions (being protoplasmic structures) cannot be absolutely unaffected.

My remark as to the authors not fully realizing the value of general anaesthetics in eliminating mental shock was written after carefully reading "Conclusions" and "Treatment"; for the employment of anaesthetics for such purpose is left to be inferred rather than directly advised (except in hyperthyroidism), and anaesthetics are so many times described as toxins and accelerators of pressor fatigue, that one is left with an impression that they should be avoided whenever possible. It may be added that the statement that in children practically no mental shock ever accompanies spinal analgesia is not supported by instances given in the paragraph on "Consciousness" (p. 939).

My complaint in regard to the assertions about anaesthetics was not so much that these should have been made as that they have been made although the evidence which may justify them is not explicitly stated. For instance, it is said (p. 942, col. 2) merely that "there is evidence" that the use of ether does not in any way mitigate the afferent impulses to the vasomotor centre. Again, I do not find that the promise (p. 1066, col. 2), "we shall show that in their effects general anaesthetics are to be classed with toxaemias," has been adequately fulfilled, although they are repeatedly so described.

This is no doubt true of anaesthetics, particularly of chloroform when given in excess (absolute overdose) or under unsuitable conditions (relative overdose); but the term does not seem generally applicable, unless indeed the authors have again used a word usually limited to an end-result to denote a complete process, including the very beginning.

One observes, for example (Nos. 24, 26, 27, 30), that whilst subjects were fully under chloroform the variations were still of the pressor type, as long as such might be expected from the nature of the surgical proceedings.

It is very satisfactory to know that the authors realized the desirability of approaching the subject from the standpoint of the practical anaesthetist, but entire success could hardly be expected unless there had been constantly associated with them some one, not only possessing high general qualifications, but also a long and varied experience in personally administering anaesthetics.

In conclusion, I would again assure Mr. Tyrrell Gray and Dr. Parsons that, although I think the lectures might be improved in some points, I have not under-estimated the originality of their researches, by which has been attained a far more coherent and satisfying theory of shock and allied conditions than I believe has ever before been presented.—I am, etc.,

London, S.W., July 18th. J. D. MORTIMER.

AN EARLY RECORD OF SECONDARY SYPHILIS WITH IRITIS.

SIR,—An interesting early mention of this disease is to be found in the unblushing autobiography of the celebrated Italian sculptor, Benvenuto Cellini. It would seem that iritis was not generally recognized as syphilitic by Roman physicians in 1532, two years after the poem of Fracastorius which gave us the name of the disease.

After mentioning the serious and painful affection of the eyes, which, he says, threatened him for a time with blindness, he goes on to say:[1]

"It was true, indeed, that I had got the sickness, but I believe I caught it from that fine young servant girl whom I was keeping when my house was robbed. The French disease, for it was this, remained on me more than four months dormant before it showed itself. Then it broke out all over my body at one instant. It was not like what one commonly observes, but covered my flesh with certain blisters of the size of a sixpence, and rose coloured.

"The doctors would not call it the French disease; albeit I told them why I thought it was this. I went on treating myself according to their methods, but derived no benefit.

"At last I resolved on taking the wood.[2] The result was that at the end of fifty days I was cured and as sound as a fish in the water."

In the above account it is interesting to notice the four months' interval between the time of infection and the spots, and presumably the iritis also.

Knowing as we do that the public now apply the word "blister" to papules as well as to vesicles, it would, perhaps, be hardly safe to assume, whatever the Italian word may be, that Benvenuto Cellini meant to describe a rash which was exclusively vesicular. Still, the description is suggestive of a late secondary eruption.

"The wood" is still in antisyphilitic use in Decoct. sarsae co. and Plummer's pill.—I am, etc.,

Brighton, June 26th. REGINALD JOHN RYLE.

Obituary.

ROBERT T. BOOTH, M.B., B.CH.,

HANKOW.

IT was with deep regret that the news of the death of Dr. Robert T. Booth was received by the people of his native city, Cork, where he passed away, surrounded by his relatives, on June 22nd, 1912, at the early age of thirty-nine years. Dr. Booth was a medical missionary in Hankow, China, and had only returned a few months ago on furlough after an exceedingly trying time during the revolution in that country last year. He organized a relief party, which he led personally under heavy fire, crossed the river to save the wounded soldiers and blind boys of his hospital. Dr. Booth was a member of the Methodist Church, and went to China under the auspices of the Christian Endeavour Societies in Ireland. He received his professional education at Queen's College, Cork. He was one of the most brilliant men of his year, taking many prizes and exhibitions; he was also captain of the college football team. In 1899 he took the degrees of M.B., B.Ch., B.A.O. of the Royal University of Ireland, with high honours. In 1899 he was ordained in Wesley Chapel, and left to take up his new work as colleague to the late Dr. Hodge, who had done so much to build up the medical mission in Hankow. On the death of Dr. Hodge some years after, the responsibility of the work fell on Dr. Booth, who further developed it on the lines laid down by his predecessor. In addition to the enlargement of the hospital, a memorial nurses' home was built. Dr. Booth threw himself heartily into the surgical work of the hospital with an ability which had characterized him from his student days.

During his first furlough he went through a course at the Tropical School in London, and obtained the diploma in tropical medicine and hygiene at Cambridge in 1906. He was the embodiment of physical and mental vigour, a man who knew his work, and was always able to rise to any occasion which the varied experiences of his life demanded of him.

His death came as a surprise to most of his friends, for although he had undergone a minor operation early in June, yet hopes were entertained of a speedy recovery, but untoward symptoms appeared, and, despite all that surgical and medical skill could do, he sank rapidly. He leaves a wife and three young children to mourn his loss.

[1] In the absence of the original, I quote from Symonds's translation.
[2] Symonds in a note has guaiacum or Italian "legno santo."

The following memorial of Dr. Booth's work in connexion with the Red Cross is contributed by Dr. W. H. Graham Aspland, F.R.C.S.E.:

"Having returned from China but two or three days, I cannot express the great shock I felt on reading the fact of the death of Dr. Robert Booth, of Hankow, and, as Vice-President of North China Medical Association, I would like to pay tribute to his memory here in England, such as, I am sure, will be paid by every medical missionary in China. It seems but a few days since I shook hands with him when we separated after our Red Cross work in Hankow and Wuchang. On that occasion it fell to my lot to reply to a toast given by the Central China Red Cross Society to myself, as representing the Northern Branch, and to all time no mention can be made of Red Cross work in China without associating with it the name of Robert T. Booth. We cannot imagine what would have been the results had he not been the life, spirit, and impulse of that work. I can see him now, rushing from one centre to another on his old bicycle, which had but one pedal—the other being a pedal rod only—arranging with merchants and others for empty warehouses and buildings to be converted into hospitals. When I remember that four hospitals had to be opened in one day in order to accommodate the wounded arriving in hundreds, only those who work in China can understand the work devolving upon Booth and his chief, MacWillie. Beyond organization he had his own hospital full, and yet he was always the man to fill the gap when one was made. I venture to assert that no man in Central China will be more missed, and I am equally certain none was more loved and revered. I can imagine the horror and grief which will fill the hearts of all medical missionaries on the Central River when they hear the terrible news of his death. He was Irish and not Scot, but none the less a 'grand man.' Booth was an ideal 'medical missionary.' Medically, nothing but the best would satisfy him. His hospital and dispensaries were not run on loose, slipshod lines, merely making medicine the bait to catch converts; he was up to the latest standards in his own attainments, and his hospital was in keeping with them. His abhorrence was a medical missionary who in fulfilling the missionary side of the work allowed the medical to become rusty and out of date. . . ."

WILLIAM JEFFREY, M.D.,

JEDBURGH.

On July 16th Dr. William Jeffrey, of Jedburgh, passed away at the age of 71, after a strenuous life of forty-seven years as a country practitioner. He was one of the last of an outstanding group of doctors on the Scottish Border who all worthily upheld the dignity and worth of medicine in that classic land. He was the son of a Border doctor, and he was a notable man through all that countryside. Able, active, kindly, shrewd and handsome, he looked and was a gentleman in all his ways. He had also a deep but silent sense of religion and reverence in his nature. He was well read in his profession, as he was in general literature, and his interests were wide. He helped to found a Cottage Hospital at Jedburgh. He could discuss a knotty point in science or morals, as well as the latest discoveries in his profession, and he dearly liked to come into Edinburgh to meet his old medical teachers and friends. He could hold his own with any of them and give as much instruction as he got. He was welcome everywhere—in the cottage and the hall—his keen personality and hearty manner making him very attractive. His life was a happy and busy one, not free from hardships and risks. He would think little of riding twenty miles to see a shepherd's wife among the Cheviots, and back again to catch a train for an Edinburgh professional dinner or a musical concert. His ruddy, cheerful face was a fine contrast to most of our city doctors. Like all country practitioners, he knew human nature well in all its weaknesses, sorrows, and strength. He was a social man in a high degree, and a loyal friend. His ability, width of medical knowledge, and experience gave him confidence in doing his varied medical work, and gained the unbounded trust of his many patients, for his practice was a very large one. The modern specialist in medicine and surgery may well look up to such a general practitioner, whose range of work is so much wider than his own, and who has constantly to meet professional emergencies unknown to him.

So long as we have country doctors like Jeffrey, who have "honour, love, obedience, troops of friends," the future of our profession is safe. He carried out the great traditions of the Edinburgh medical school, when its teachers included Simpson, Syme, Goodsir, Hughes Bennett, and Christison.

Dr. Jeffrey took the degree of M.D. in Edinburgh in 1863, after a distinguished career as a student. He was house-physician to Dr. Warburton Begbie and Dr. Matthews Duncan in the Royal Infirmary of Edinburgh, where the late Professor Rutherford, another Border man, was his fellow resident, and a prosector with Sir William Turner. He leaves a widow, one daughter and two sons—Dr. John Jeffrey, F.R.C.S.E., who succeeds him in his practice, and Dr. George Jeffrey, M.R.C.P.E., both of them men of distinction.

E. D. RITCHIE, M.B., B.C.

We regret to announce the death of Dr. E. D. Ritchie, which occurred at his residence, Chandler's Ford, Hants, on July 6th. For eight months he had borne with the greatest fortitude an incurable internal malady. He watched his own case with the attention he would give to his own patients.

Dr. Ritchie was born at Brighton, September 16th, 1859, and was the youngest son of the late William Ritchie, Advocate-General of Bengal, and Legal Member of the Council of the Governor-General of India. He was educated at Twyford and Winchester, and when he left the latter for Cambridge he was Prefect and Captain of the School Four. He entered Trinity College, Cambridge, in 1878, and rowed in the First Trinity first boat in the following year. He was equally distinguished in sports and in the schools. He gained an Exhibition in Natural Science, and obtained a First Class in the Natural Science Tripos in 1881. He was twice chosen to compete with Oxford for throwing the hammer, and won the event for Cambridge in 1882. In 1883 he entered at St. Thomas's Hospital, and speedily came to the front among the men of his year. He held the posts of both House-Surgeon and House-Physician. He was admitted a member of the Royal College of Surgeons of England in 1885, and graduated M.B., B.C., at Cambridge in the following year. There is no doubt he might have made headway and a name for himself if he had elected to remain in London, but he felt a call to the country, and he settled in 1888 at Yorktown, near Camberley, Surrey. In 1891 he married Miss Lilian Dora Middleton, youngest daughter of the late Rev. F. M. Middleton, R.D., then Vicar of Camberley. After his marriage he moved to the neighbouring village of Blackwater, Hants, where he remained till 1897, when he settled at Chandler's Ford, where he practised until his fatal illness. He was a true gentleman, and never swerved from the straight path of ethics. He had musical tastes, and was fond of hunting. Dr. Ritchie was appreciated as the Honorary Secretary of the Diocesan Choral Association, and encouraged singing amongst the young as preventive of nasal and respiratory affections. As a Chairman of the Winchester Division he won the respect and regard of the members, for in debate he always spoke to the point. He was a strong supporter of the cardinal points of the British Medical Association regarding the Insurance Act. He was laid to rest on July 17th, the funeral being attended by a number of his professional brethren, friends, and patients. Conspicuous among the many wreaths was one from the Winchester Division. The last months of Dr. Ritchie were materially alleviated by the untiring skill and devotion of Mr. H. J. Godwin, Surgeon to the Hants County Hospital and Secretary to the Winchester Division.

DEATHS IN THE PROFESSION ABROAD.—Among the members of the medical profession in foreign countries who have recently died are Dr. H. Waitz, surgeon in charge of the Red Cross Hospital at Hamburg, and author of works on nursing, etc., in the sixty-second year of his age; Dr. M. J. Petrunkewitch, medical superintendent of the Twer Government Hospital, and a member of the first Duma; Dr. S. W. Schidlowski, professor in the Army Medical

Academy, St. Petersburg, aged 64; Dr. Jerome H. Waterman, a well-known orthopaedic surgeon of New York, aged 41; Dr. Leon Oppenheimer, the well-known gynaecologist of Wurzburg, aged 71; Dr. J. Brandt, sometime professor of surgery in the Medical Faculty of Klausenburg; Dr. Paul Villemin, son of the investigator who established the infectivity of tuberculosis, surgeon to the Paris hospitals, author of a work on infections, traumatisms, and diatheses, and other contributions to medical literature, aged 51; Professor Ernst Schulze, of Zürich, a very distinguished investigator in the domain of biochemistry, aged 72; Dr. J. Chatin, Professor of Histology in the Paris Faculté des Sciences, and Member of the Académie de Médecine; Dr. Moritz Seidel, Professor of Pharmacology in the University of Jena, aged 75; and Dr. Emilian Kaufmann, Professor of Ear and Nose Diseases in the Czech University of Prague.

Universities and Colleges.

UNIVERSITY OF LONDON.

THE following candidates have been approved at the examinations indicated:

SECOND M.B. (*Part II.*)—B. P. Allinson, D. Aucutt, K. R. Batra, K. Biggs, A. L. Blunt, O. D. Brownfield, J. Capell, F. Chadwick, P. C. P. Cloake, B.Sc., C. Cooke, J. N. Deacon, C. R. Denny, J. Y. Dent, E. G. Dingley, C. H. Edwards, H. Ellis, J. Fanstone, R. H. Fleming, B.Sc., Annie M. Forster, H. R. Friedlander, G. F. P. Gibbons, E. F. Guy, D. T. Harris, E. E. Herga, S. H. Hodges, R. N. Hunter, C. E. Jenkins, Rosalie Jobson, R. T. Jones, W. A. E. Karunaratne, K. W. Lewis, G. C. Linder, D. G. F. Moore, J. B. Mudge, Kathleen H. Parkinson, O. Parry-Jones, H. R. Partridge, A. H. Pemberton, L. G. Phillips, L. E. Pimm, K. N. Purkis, C. S. L. Roberts, Violet I. Russell, P. Sai, E. A. L. Sansom, S. K. Sanyal, W. G. Shakespeare, Edith A. Shaw, G. J. C. Smyth, Elsie Stansfeld, L. F. Strugnell, T. C. Summers, L. H. Terry, J. O. Thomas, G. N. Welsford, J. D. Wilkinson, C. M. Williams, L. H. W. Williams, H. W. S. Wright.

M.D., BRANCH I (*Medicine*).—S. H. Booth, B.S., H. C. R. Darling, B.S., H. S. Furness, B.S., Rose F. Jordan, B.S., T. S. Lukis, B.S. (University Medal), E. G. Perodeau, B.S., C. E. Shattock, B.S., N. Tattersall, B.S., H. A. Treadgold, B.S., H. O. West, B.S., S. Wyard, B.S.

M.D., BRANCH III (*Mental Diseases and Psychology*).—B. Hart, G. E. Peachell, B.S.

M.D., BRANCH IV (*Midwifery and Diseases of Women*).—H. L. Barker, B.S., R. L. E. Downer, B.S., H. B. Foster, G. B. Harland, B.S., G. Maxted, B.S. (University Medal).

M.D., BRANCH V. (*State Medicine*).—W. A. Daley, B.S., B.Sc., W. Scarisbrick, B.S., B.Sc.

M.D., BRANCH VI (*Tropical Medicine*).—Ardeshir K. Contractor, B.S., F. C. McCombie, Dossibai R. C. Patell, B.S., R. O. Sibley.

QUEEN'S UNIVERSITY OF BELFAST.

THE following candidates have been approved at the examinations indicated:

FIRST M.B. (*Chemistry*).—J. Adams, C. Barton, Marion Crawford, J. H. Davison, J. Fegan, J. M. A. Gorman, R. Hall, Arabella C. Kirker, J. G. M. Leyden, J. J. Marner, P. J. Murnane, H. J. O'Prey, W. H. Pedlow, C. A. Whitfield, J. Wilson.

FIRST M.B. (*Physics*).—J. Adams, S. T. Alexander, C. Barton, J. H. Davison, Dorothy I. Dobbin, J. Fegan, Arabella C. Kirker, J. G. M. Leyden, J. J. Marner, T. J. Marner, P. J. Murnane, C. A. Whitfield, J. Wilson.

FIRST M.B. (*Zoology*).—G. V. Allen, C. Barton, W. Bryars, A. G. Campbell, G. Chesney, N. W. Clarke, C. D. Crawford, Marion Crawford, A. C. Dickey, Grace Marion English, F. Ewart, E. Freeman, H. E. Hall, R. Hall, J. A. Harbison, J. H. B. Hogg, Arabella C. Kirker, J. G. M. Leyden, W. M'Bride, R. N. B. M'Cord, N. M'Cullagh, J. P. M'Ginley, B. W. M'Kinney, M. M'Menamin, F. M'Sorley, P. J. M'Sorley, H. E. Magee, J. J. Marner, T. J. Marner, D. Mitchell, F. P. Montgomery, Elizabeth M. Moore, P. J. Murnane, W. Napier, J. O'Kane, M. F. O'Kane, Annie M. Orr, Charlotte Pedlow, W. H. Pedlow, Margaret S. Purce, R. J. Rea, J. A. Ritchie, W. Saunderson, J. Scott, Mary G. Thompson, E. S. G. K. Vance, J. H. Vance, D. R. Wheeler, C. A. Whitfield, F. H. Whyte, J. Wilson, F. P. Woods.

FIRST M.B. (*Botany*).—J. Adams, G. V. Allen, W. Bryars, A. G. Campbell, G. Chesney, N. W. Clarke, C. D. Crawford, J. H. Davison, A. C. Dickey, J. Dunlop, Grace M. English, E. Freeman, A. Gaston, H. E. Hall, J. A. Harbison, J. H. B. Hogg, S. M'Clure Kirk, Arabella C. Kirker, R. N. B. M'Cord, N. M'Cullagh, J. P. M'Ginley, M. M'Menamin, F. M'Sorley, P. J. M'Sorley, H. E. Magee, J. J. Marner, T. J. Marner, R. G. Meyer, D. Mitchell, Elizabeth M. Moore, W. Napier, J. O'Kane, Charlotte Pedlow, W. H. Pedlow, Margaret S. Purce, R. J. Rea, W. Saunderson, Mary G. Thompson, E. S. G. K. Vance, J. H. Vance, D. R. Wheeler, C. A. Whitfield, F. H. Whyte, J. Wilson, F. P. Woods.

SECOND M.B.—J. B. Alexander, E. G. B. Calvin, P. Clarke, T. W. E. Elliott, Mary A. Gallagher, H. D. Graves, S. J. Hutchinson, P. Kane, Mary M. Keirns, T. M'Clurkin, R. G. M'Elney, J. C. M'Millan, H. F. M'Nally, Sylvia Marsh, J. F. Meenan, T. Milling, S. A. D. Montgomery, W. N. Montgomery, A. Porter, F. A. E. Silcock, W. A. Thompson, Elizabeth S. Walker, D. K. Watterson. *Passed in Anatomy:* A. W. Bourke, W. Russell. *Passed in Physiology:* J. Cullenan.

THIRD M.B. (*All Subjects*).—N. Beattie, W. M'Meekin Chesney, J. Duffin, A. Fullerton, D. Gaston, Margaret Gorman, W. S. B. Hay, J. F. D. Hunter, W. J. Lascelles, B. Lyons, C. M'Neill M'Cormack, W. M. H. M'Cullagh, F. M'Kibbin, R. N. M'Kinstry, E. B. C. Mayrs, J. J. Murray, M. G. Paul, G. R. B. Purce, G. W. Rea, Elizabeth M. Robb, J. Tate, O. Wilson, W. R. E. Wilson, P. P. Wright. *Passed in Pathology, Medical Jurisprudence, and Hygiene:* R. G. Blair, H. A. Gillespie, T. Grimson, G. E. Hull, W. M'Dermott, J. I. Murnane. *Passed in Pathology and Materia Medica:* F. L. P. G. Bennett, E. U. M'William. *Passed in Medical Jurisprudence and Hygiene:* R. Condy, F. J. Devlin, W. W. Dickson, E. Doherty, E. C. T. Emerson, G. Gordon, W. H. Hardy, D. Jamison, T. B. M'Kee, R. C. M'Millan, E. A. Mallon, J. C. Robb, J. S. Savage, F. A. L. Shields, F. G. Smyth, J. K. Stewart, R. F. Walker, J. Warwick, J. C. Wilson. *Passed in Materia Medica:* H. P. Hall, V. Magee.

FINAL M.B., B.Ch., B.A.O.—D. R. Acheson, †J. H. Beverland. Sarah E. Calwell, †S. H. Davison. †S. R. Foster, T. F. S. Fulton, C. L. Gaussen, J. M Gibson, N. B. Graham, N. C. Graham, J. Hill, T. H. Houston, J. T. Kyle, J. Lyons, R. J. M'Connell, R. M'Culloch, *H. P. Malcolm, †R. Marshall, H. H. Mulholland, W. M. Walker, J. R. White, W. O. Wilson.

* First class honours. † Second class honours.

M.D.—*By Examination:* R. J. Lyttle, *J. M. M'Cloy, J. J. A. G. MacMurtry. *By Thesis:* J. A. Brown, J. Dodd, †V. G. L. Fielden, W. Hanna. †R. Heard, D. J. Jackson, A. Kidd, T. J. S. Moffet, J. W. A. Wilson.

* With commendation. † Recommended for gold medal.

D.P.H.—G. S. Glass, L. C. Johnston, W. W. D. Thomson, R. M. Trotter, B. A. West.

Awards.

In connexion with these examinations the following awards have been made:

FIRST M.B.—First Scholarship, £35, W. Bryars, R. N. B. M'Cord, equal. Second Scholarship, £20, A. C. Dickey, D. Mitchell, equal. Isabella Tod Memorial Scholarship, M. Georgina Thompson.

SECOND M.B.—First Scholarship, £40, and Juliet Symington Gold Medal in Anatomy, E. G. B. Calvert. Second Scholarship, £30, J. C. M'Millan. Third and Fourth Scholarships (divided), £11 13s. 4d. each, S. J. Hutchinson, T. Milling, Elizabeth S. Walker, equal.

THIRD M.B.—First Scholarship, £40, A. Fullerton. Second Scholarship, £30, E. B. C. Mayrs. Third Scholarship, £20, W. S. B. Hay. Fourth Scholarship, £15, G. R. B. Purce.

FOURTH M.B.—Special Scholarship of £20 and Scholarship in Surgery, £30, H. P. Malcolm. Scholarship in Medicine, £20, R. Marshall. Scholarship in Midwifery, £30, J. H. Beverland.

Medical News.

THE total number of students of medicine in the German Universities during the current session is 13,409, as against 11,927 in the summer session of 1911.

SIR FRANCIS RICHARD CRUISE, M.D., left personal estate in the United Kingdom valued at £23,358. He left his collection of books relating to the life and works of Thomas à Kempis to be preserved in the library of the Jesuit Order at Upper Gardiner Street, Dublin.

THE late Alderman Thomas Houghton Waters, M.D., "father" of the medical profession in Liverpool, left estate of the gross value of £24,070, of which £23,788 is net personalty. He left £100 each to the Liverpool Medical Institution and the British Medical Benevolent Fund.

IN his report for the three weeks ending June 15th the Medical Officer for the City of London again draws attention to the unsatisfactory conditions in which frozen pork is imported from China. The carcasses present evidence of merely superficial inspection and of careless butchery. The trachea, oesophagus, and even the rectum are sometimes left *in situ*, and no serious examination of the glands about the neck is made; nor are incisions in the cervical region skewered open before the carcasses are frozen. Hence, when a carcass is seen to have been imperfectly examined it must first be thawed out in this country, a course which is prejudicial to it whatever its original suitability for food may have been.

THE Marquis of Crewe, who is president of the Summer School of Town Planning which is to be held at Hampstead Garden Suburb, will give the inaugural address in the Institute Hall on Saturday, August 3rd. The Summer School is being held under the auspices of the London University Extension Board, and the course lasts a fortnight, from the 3rd to the 17th of August. The lectures and demonstrations are intended to be of special value to municipal engineers, architects, and surveyors, but most of the lectures will be of interest to others who are concerned with town planning from the more general aspect of civic and economic progress. Applications to attend the course, or single lectures or excursions, should be addressed to the Honorary Secretary, Summer School of Town Planning, Hampstead Garden Suburb, N.W.

A STRIKING proof of the increased interest on the part of the general public in the important question of sanitary housing is to be found at the Latin-British Exhibition held at the White City, Shepherd's Bush, where the Gidea Park Company, Limited, are exhibiting a six-roomed

specimen cottage, modelled on exactly the same lines as those on the well-known Gidea Park Estate in Essex. This pretty little model, which is furnished throughout in a most artistic fashion by Messrs. Oetzmann, of Hampstead Road, W., has been planned on the most approved principles of modern hygiene, and is a triumph of ingenuity in regard to the saving of time, labour, and expense in the home. Without sacrificing anything of the quaint beauty of the old-world furniture and architecture, the designers have availed themselves to the full of the most recent household appliances, and have thus successfully solved the problem of building a house that is at once beautiful, convenient, and healthy. It may interest our readers to learn that a similar cottage can be built at Gidea Park for the sum of 900 guineas, whilst Messrs. Oetzmann undertake to furnish it down to the smallest details for little more than a quarter of that sum.

Fifteen Chinese students, all professing Christians, recently had the degree of Doctor of Medicine conferred upon them by the Union Medical College, Peking. Mr. Liang Shih-yi, who was sent by the President of the Republic as his representative, read a message, in which the President said past history showed that improvement in health depended upon medical science. As the world became more civilized, sanitary measures were improved and medical science spread its influence throughout the world. The college had the worthy object of working for the happiness of this nation, and was sending forth trained doctors to contribute their share towards helping the people to be a healthy nation. As President he would lead the whole nation to acknowledge with gratitude the great work done by the college. This is the second occasion on which students in the college have received their degrees. The principal of the college is Dr. E. J. Stuckey, who was sent out by the London Missionary Society for this work.

The sixth Pan-American Congress will hold its meeting at Lima in August (3rd to 10th) in connexion with the Latin-American Medical Congress and the Congress of Hygiene, under the patronage of the President of the Republic of Peru. The work of the congress will be divided among eight sections—(1) anatomy and physiology; (2) bacteriology and parasitology; (3) medicine, including (*a*) clinical medicine, therapeutics and symptomatology, (*b*) children's diseases, (*c*) mental and nervous diseases, criminology and legal medicine, (*d*) tropical medicine and epidemiology; (4) surgery, including (*a*) clinical surgery, paediatric surgery, (*b*) eye, ear, nose and throat, (*c*) venereal and urinary diseases, dermatology, (*d*) obstetrics and gynaecology; (5) hygiene, including (*a*) military and naval hygiene, (*b*) tuberculosis, (*c*) health of children, (*d*) alimentation, (*e*) city and rural, professional and school hygiene, (*f*) social and statistical demography, sanitary legislation, (*g*) sanitary technology; (6) physics, chemistry, natural history, pharmacology; (7) veterinary medicine; (8) odontology.

The annual report of the Medical Officer of Health for the Shanghai Municipality states that the foreign population in October, 1910, was 13,536, and the native population at the same date 488,005; the foreign death-rate was 20.2 per 1,000, and the native 17.5 per 1,000. The principal causes of deaths among the foreign population were small-pox, typhoid fever, scarlet fever, tuberculosis, dysentery, and beri-beri. Among the native population small-pox and tuberculosis accounted for a large number of deaths. There were 304 fatal cases of small-pox, but the Chinese are beginning to appreciate the benefits of vaccination as opposed to inoculation, which they have practised for hundreds of years; 4,608 vaccinations were done during the year. The lessening of the native death-rate from tuberculosis is attributed rather to deaths being hidden or intentionally returned from other causes, owing to dislike of disinfection, than to any marked sanitary amelioration. Something has been done by widely distributing the tuberculosis prevention notice, by a public crier reciting the same to crowds gathered by a bell, and by careful investigation of all cases notified, so as to ensure disinfection of the infected sputum. Plague-infected rats were first discovered in 1908; a complete plague survey of the Settlement was maintained throughout the years 1909 and 1910. Of 19,559 rats found dead during 1910 and brought to the laboratory for examination, 249 were plague-infected. Six fatal cases of plague in man were reported. Over 20,000 specimens were examined in the public health laboratory, and a large number of analyses were made. Two horses are kept for the production of diphtheria antitoxin, and a large amount of Haffkine's plague prophylactic has been made to meet local needs.

Letters, Notes, and Answers.

ORIGINAL ARTICLES and LETTERS *forwarded for publication are understood to be offered to the* British Medical Journal *alone unless the contrary be stated.*

Communications respecting Editorial matters should be addressed to the Editor, 429, Strand, London, W.C.; those concerning business matters, advertisements, non-delivery of the Journal, etc., should be addressed to the Office, 429, Strand, London, W.C.

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Correspondents who wish notice to be taken of their communications should authenticate them with their names—of course not necessarily for publication.

Correspondents not answered are requested to look at the Notices to Correspondents of the following week.

Telegraphic Address.—The telegraphic address of the EDITOR of the British Medical Journal is *Aitiology, London.* The telegraphic address of the British Medical Journal is *Articulate, London.*

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2631, Gerrard, EDITOR, BRITISH MEDICAL JOURNAL.
2630, Gerrard, BRITISH MEDICAL ASSOCIATION.
2634, Gerrard, MEDICAL SECRETARY.

☞ *Queries, answers, and communications relating to subjects to which special departments of the* British Medical Journal *are devoted will be found under their respective headings.*

QUERIES.

Income Tax and the Insurance Act.

A. B. has a salary of £150, with board and lodging, and, in addition, receives a few pounds in the way of fees. He does not wish to come under the Insurance Act, and would prefer, if possible, to pay income tax on a small sum.

*** Our correspondent does not come within the scope either of the income tax or of the Insurance Act. For the purposes of the latter the person employed must receive remuneration "at a rate not exceeding in value £160 a year"; these words clearly require that the value of the board and lodging shall be taken into account, and the remuneration in the present case is therefore clearly over £160 a year. For the purposes of the income tax, however, no account is taken of the rules of board and lodging, and our correspondent is therefore exempt, as having an income under £160 when computed according to the provisions of the income tax.

ANSWERS.

Venetian Fever.

Major R. Kennedy, R.A.M.C., writes in reply to "M." (British Medical Journal, July 6th, p. 52): The symptoms suggest Malta fever. Blood should be tested for reaction to *M. melitensis.*

LETTERS, NOTES, ETC.

Abnormal Development of a Purely-bred English Female Child, Aged 4 Years.

Dr. J. Thomson Clark (London, S.E.) writes: The following note of a case may be of interest:—A.B., female, aged 4 years 1 month, height 112 cm., weight 25 kg., muscular, plump, and intelligent. Breasts: Pendulous, with abundant glandular tissue, firm and elastic to touch; areolae well developed, pigmented, fully 1 in. in diameter, and showing "Montgomery's" tubercles. Menstruates every month, duration usually three days; colour, smell, etc., in every way similar to periods in adult female; no pain; has to wear diapers. Periods have appeared regularly since birth. Genitals well developed, much "down" on pubes, and several long hairs. No axillary hair. Teeth temporary and normal. Otherwise a rosy-cheeked, perfectly normal child.

SCALE OF CHARGES FOR ADVERTISEMENTS IN THE BRITISH MEDICAL JOURNAL.

	£	s.	d.
Eight lines and under	0	4	0
Each additional line	0	0	6
A whole column	2	13	4
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An average line contains six words.

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